











"THE AEROPLANE," JANUARY 6, 1915.

# THE AEROPLANE

12  
WEEKLY

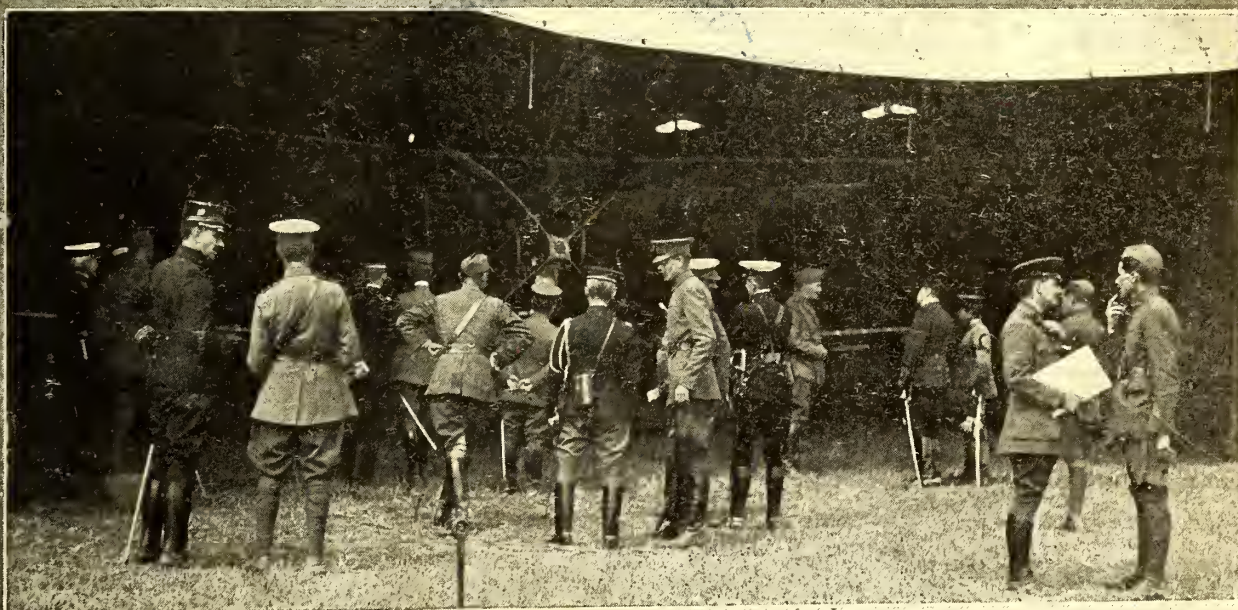
Edited by C. G. GREY. ("Aero-Amateur")

VOL. VIII. [REGISTERED AT THE G.P.O.  
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WEDNESDAY, JANUARY 6, 1915.

No. 1

IN TIME OF PEACE.



Foreign officers of all nations visiting the R.F.C. Concentration Camp at Netheravon in June last.

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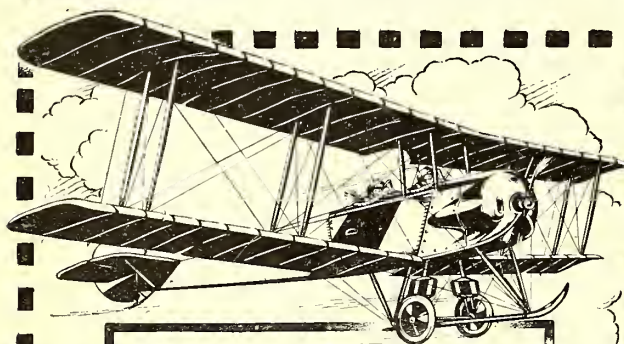
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## 1914—A Retrospect.

Though few people have any reason to love the year 1914 it must be admitted that it will always stand out in history as the year in which the aeroplane showed its true value.

Even before the war the tremendous long and high flights made by men like Herren Böhm, Basser, Langer, Thelen, Linnekogel, and Oelerich, MM. Gilbert, Garaix, Pourpe, Garros, Brindejonc des Moulinais, and Legagneux, and the Russian Sikorski, apart altogether from the acrobatics of the lesser aviators, indicated the possibilities of the aeroplane simply as a means of locomotion.

Since war broke out the aeroplane has done such surprising things that even the least imaginative inhabitant of this country has begun to realise that we have in it at least a very necessary adjunct to Naval and Military operations, and very possibly a vehicle for ordinary use in such time as war may cease.

In going through the issues of this paper for the past year one cannot fail to be struck by the predominance of Germany in all that concerned aviation. The official support given to German constructors at a time when our own constructors were struggling for their lives, the wonderful thoroughness and efficiency of the constructors themselves, the extraordinary organisation of everything connected with the new arm, give one furiously to think, in the light of later events. It may be that the date of the war had not been fixed, but it is certain that some unseen, and probably unhuman, force was steadily moving everything towards war. That Germany should have failed to obtain the command of the air is one of those curious freaks of fate which can only be explained by the theory that the British are the Chosen People of this epoch. By all the rules of science our little air fleet ought to have ceased to exist, along with our "contemptible little Army," about a week after war was declared. Why it did not vanish I hope to attempt to explain at a later date, but the wonder of its existence remains.

The truth about the Germans is excellently put by a writer in the "Times" who says:—"They are really a people immensely laborious, docile, and wrong-headed, but formidable because of the combination of all these qualities. They are as ignorant as they are learned . . . and their intelligence in detail is only equalled by their stupidity about main issues. In fact, they are merely human, and having aimed fanatically at a certain kind of strength they have the weaknesses incidental to that strength. The individual German is to us, if we can catch him alone and look at him calmly, still a little ridiculous, and the nation consists of individual Germans. But when a man seems ridiculous his prestige, whether good or evil, is gone, and so it is with a nation. We shall fight the Germans better if we can laugh at them a little, and in doing so we shall follow our own national tradition which has kept us so often out of panic and cruelty. The war for us is a job to be accomplished, a disorder to be overcome, as if we were policemen dealing with a mob, not men fighting with devils."

In fact, like our friends of the Royal Aircraft Factory, the Germans have too much science and not enough sense. If we in this country had just a bit more of both we should get the job done sooner, but we can at

least be thankful that, on the whole, we have more sense than science, at any rate, the average Flying Officer of the R.F.C. has, and that is one reason why he wins through. Nevertheless, with all the warnings placed before us of Germany's preparations for the aerial side of war, it is a pity that more was not done to put our Services on something like an equal footing. A glance through the following retrospect of the year up to the time when war broke out, shows how clear those warnings were.

In this retrospect I have stated facts, without, in most cases, drawing any inference from them. The lessons are too obvious to need explanation. No mention is made of deaths in aeroplane accidents, as there has hardly been enough information obtainable about those occurring abroad to enable one to learn anything of value from them. The names of British aviators killed, and of foreigners killed in this country, will be given separately. Let us hope that, despite the perils of war, the list will be proportionately smaller in the coming year, though, considering the amount of flying done in the past year, it is actually very small. In most cases the deaths were quite avoidable, and it is to be hoped that their lessons have been learned by those responsible for them.

On the brighter side of the picture, we may pride ourselves on the fact that we have produced in this country the fastest machines in the world for their power, in the small biplanes commonly known as "tabloids," which were originated by the Sopwith Co., and have been built with variations by the Martin-Handasyde, Bristol and Armstrong-Whitworth firms. The big seaplanes built by the Short, White, and Sopwith firms, are the fastest machines of their type in the world. Also, the Avro is the most efficient two-seater of its power in the world. All this has been done by sheer British obstinacy, in a most unscientific way, and despite official discouragement. On the same principle of obstinacy under difficulties the Aircraft Manufacturing Co. has built up a big business, and is turning out machines which are better than their French originals, and the Vickers Company has produced a really useful gun-carrier.

On the whole we might have done very much worse. Let us, therefore, consider the happenings of the year.

### January.

The New Year's Honours List contained the names of several officers connected with aviation. Captain Murray Sueter, R.N., Director of the Air Department of the Admiralty, and Captain Godfrey Paine, R.N., Commandant of the Central Flying School, were made Companions of the Bath, and Lt. Usborne was made a Commander, R.N. Major Trenchard, D.S.O., Assistant Commandant at the Central Flying School, and Major Fulton, R.A., who had just been appointed head of the new Aeronautical Inspection Department of the Royal Flying Corps, were also made C.Bs.

The formation of the Aeronautical Inspection Department, which took place during January, under Major Fulton, was the first step in reforming the greatest evil in the previous history of the Royal Flying Corps, in that it placed the acceptance of Military Aeroplanes under an officer of the Royal Flying Corps, instead of compelling the manufacturers to submit their machines to the approval of an establishment which was practically a direct competitor, and was obviously

hostile to them. The new Department has done excellent work throughout the year, and Major Fulton has recently been graded as Wing Commander with temporary rank of Lieut.-Colonel.

In Naval aviation, the first steps were taken towards making the Isle of Grain into a seaplane station to control the approaches to London, and the first signs were given of the Royal Naval Air Service absorbing the Coast Guard Service.

Early in the month, a protest was made in this paper against the placing by the War Office of large orders for "B.E." biplanes. It was then stated that "it does not appear that corresponding orders have been issued for British aeroplanes of any constructor's own designs, despite the fact that there are those which surpass the B.E. in efficiency." Almost at the same time, the new 80-h.p. Avro was produced, and on its first tests gave a range of speed between 30 and 83 miles per hour, carrying a pilot, a 11-stone passenger, and three hours' fuel. This maximum speed has since been increased. Despite this performance, this type of machine was not encouraged by the War Office, and we are now paying for the mistake, because the improved Avro of this type has turned out to be by far the best two-seater tractor biplane at present used by the Royal Flying Corps, but, owing to the preference given to B.E.s. at this period, the supply is not as large as one could wish.

During January the Wight seaplane, 160-h.p. Gnome, weighing loaded 2,400 lbs., put up a speed range of 31-63 m.p.h., and a climbing speed of 500 feet per minute, which, at the time, was the best performance done by a seaplane.

On the 21st Lieut. Seddon, R.N., flew from Isle of Grain to Plymouth on a Maurice Farman seaplane, 350 miles, the longest voyage done in the day up to that date.

In civilian flying, January was chiefly noted for the unbroken sequence of flying exhibitions and competitions at Hendon on Saturdays and Sundays, and for the various exhibition flights at provincial centres by the late Mr. Hamel, Mr. Hucks, Mr. Raynham, and others. On the 16th, the Grahame-White Aviation Co. gave a "looping the loop" dinner at the Royal Automobile Club, everything being done topsy-turvy.

On the 29th Mr. Hamel gave a flying exhibition at Windsor Castle by command of the King.

During January, a series of articles obviously inspired by friends of the Royal Aircraft Factory, appeared in the Engineering Supplement of the "Times," condemning the aeroplane industry, and exalting the Royal Aircraft Factory. These were duly controverted, and their inaccuracy exposed by Mr. Whittaker in this paper.

In France a new directorate of military aeronautics was established, and the post of Permanent Inspector was abolished. The new system worked badly, and the French Flying Corps felt the effect of this maladministration seriously at the beginning of the war. There was much scandal in the French Press during the month concerning the insufficiency in the supply of military aeroplanes, but the full extent of the scandal has never been revealed. M. Girod, deputy for Doubs led the attack on officialdom with great success.

Among civilian aviators there was an epidemic of looping the loop, which affected practically all the well-known pilots. Much good flying was done, M. Gilbert being credited with rising to 500 metres (1,640 feet) in 70 seconds on a Morane 100-h.p., 9-cylinder Le Rhone. On the 31st, M. Garaix took six passengers to a height of 6,000 feet on the Paul Schmitt biplane. On the 16th, the French rigid airship, the Spiess, voyaged over Paris, since when she has done little. On the same day the Adjudant Vincenot remained in the air for 18 hours.

In Germany, plans were laid down, with the active support of the War Department, for the various great flying competitions which took place later in the year. The Zeppelin, LZ22, was completed during the month, and taken over by the German Army, being numbered officially Z VII. The Zeppelin, "Sachsen," hired by the Navy to replace L II, which exploded, flew from Cuxhaven to Heligoland and back. A 100-h.p. Curtiss flying boat was delivered to the German Navy. At that period Germany was said to possess 16 airship sheds, 7 single, and 9 double, or accommodation for 25 airships.

In Russia M. Sikorsky succeeded in tuning up his big biplane. This machine has a span of 125 feet, weighs 3½ tons, and was driven by four 100-h.p. Argus engines. It has since done much good flying, but, contrary to newspaper reports, it is not used in the war.

In Italy a number of Savoia biplanes, H. Farman type, were delivered to the Government. The aviator Pensuti raised the Italian height record on the 29th to 13,300 feet on a Caproni mono., 80-h.p. Gnome. In Egypt much flying took place. Mr. Frank McClean, Mr. Ogilvie, and Mr. Horace Short started their voyage up the Nile to Khartoum on a Short biplane. The late M. Marc Pourpe started from Cairo and arrived at Khartoum on January 12th. Captain Watt, Mr. Samuel Pierce, and MM. Olivier and Védrières and Bonnier also flew in Egypt, M. Bonnier being the first to encircle the Pyramids.

In the United States, Mr. Daniels, Secretary of the Navy, in his report to Congress, put in a strong plea for the United States air services. The same plea was repeated even more strongly a few days ago. In the intervening twelve months very little progress has been made.

Mr. Lincoln Beachy flew for a matter of 300 feet inside an exhibition hall at San Francisco, and thus became the first indoor flier. A regular ferry service between Tampa and St. Petersburg, Florida, was established, with a couple of Benoist flying-boats, indicating the beginning of a regular industry.

## February.

February was notable for the fact that the Air Department at the Admiralty instituted the sound policy of encouraging the aeroplane industry with large orders. This policy has enabled several of our best aeroplane manufacturers to carry on when, if they had been dependent on the War Office, they would have retired from business, and therefore the Royal Flying Corps may thank the Air Department for the possession of a large proportion of the aeroplanes on which they have done such good work.

At the War Office strenuous efforts were made to accelerate the delivery of Mark B.E. aeroplanes to the Army, in order to make a good show in the Army Estimates.

On the 7th, Mr. Churchill, First Lord of the Admiralty, paid a visit to Isle of Grain and Eastchurch, making the journey from Tilbury to these places by air.

A splendid performance was put up early in the month by a Short tractor seaplane, which, carrying pilot, passenger, wireless apparatus, and 4½ hours' fuel, was officially timed to do 76½ miles per hour.

At the beginning of the month a new 80-h.p. Avro, piloted by Mr. Raynham, with Mr. McGeagh Hurst as passenger, climbed 5,000 feet in 10 minutes and 10,500 feet in 25 minutes. On the 4th, Mr. Raynham took his 80-h.p. Avro to 15,000 feet over Brooklands, then, stopping his engine, glided to Hendon (21 miles), which still ranks as the longest glide on record.

On the 20th, Mr. Churchill flew on a Sopwith biplane at Hendon, and on the 21st and 22nd on various seaplanes at Portsmouth, on each occasion controlling the machines himself when in the air.

On the 18th, the War Office issued the syllabus of a series of official tests for aeroplanes of private design, thus showing for the first time that the Royal Flying Corps was beginning to break away from the leading-strings of so-called "experts."

On the 21st, a Supplementary Estimate for Military Aviation was laid before the House of Commons by Colonel Seely, the amount being £296,000, demonstrating the lack of foresight displayed by this Minister in the original Estimate. The necessity for a supplementary estimate was foretold by Mr. Whittaker when the original Estimate was presented.

The British height record with a passenger was raised by Mr. Raynham, accompanied by Mr. Hurst, to 14,300 feet on a standard Avro, 80-h.p. Gnome. Certain small alterations in the Wight seaplane raised its speed to 72 m.p.h. A new school was opened at Hendon by Mr. Geo. W. Beatty, who organised the school so as to teach pupils entirely on the dual-control principle.

Concerning foreign aviation, emphasis was laid in this paper on Germany's preparedness for action in the air, a description being given of the method by which the Germans' stock of reserve machines was kept constantly in flying order. The



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formation of a new aeroplane station at Nordholz, near Cuxhaven, with 600 men, was made known. It was also announced that the new Zeppelin factory at Potsdam and sheds at Cuxhaven were approaching completion, and that L.Z. 23 went out for her first tests on February 21st. Further, it was stated that during the previous month at the Johannisthal aerodrome alone 112 pilots made 2,398 ascents on 29 days, the figures being unapproachable in this country by all our aerodromes together.

A number of very fine flights by German aviators were done during the month. On the 3rd, Bruno Langer, L.V.G. biplane, 100-h.p. Mercedes, flew without stopping for 14 hrs. 7 mins. On the 8th, Schueler flew from Berlin to Kiel via Hamburg on an Ago biplane in 9 hrs. 45 mins. On the 12th, Langer flew for 16 hrs. 7 mins. On the 19th, Basser, on a Rumpler-Taube, flew for 10 hrs. 6 mins. On the 11th, Thelen, Albatros, with four passengers, reached a height of 2,850 metres. On the 19th, Linnekogel, Rumpler-Taube, and one passenger, reached a height of 3,400 metres (11,300 feet). None of these times or distances have ever been approached in this country, and they indicated the immense progress Germany was then making.

In France, the late Senator Raymond announced that the national fund of £158,573 had bought 210 aeroplanes, fitted up 70 aeroplane sheds, and trained 75 pilots. On the 22nd, a match took place between MM. Garros and Hamel at Juvisy, and they were adjudged equal in skill. On the 24th, M. Garaix, on the Schmitt biplane, took four passengers up to 2,150 metres (7,050 feet). The French Budget allotted 6,000,000 francs for naval aviation.

In Russia a determined effort was made to reorganise military aviation. At that time it was stated that Russia had 300 aeroplanes, and had placed orders for 500 more. On the 27th, M. Sikorsky flew for 18 minutes with 16 passengers on board, and afterwards for 2 hrs. 6 mins, at a height of 3,000 feet across country with 8 on board, using Salmson motors.

In the United States a board of naval officers recommended that every warship should carry an aeroplane scout, and they pointed out that aircraft were more valuable for use at that work than for coast defence. These advanced views have not yet penetrated the British Navy. Later the Navy Board recommended that £259,500 be spent on aircraft and equipment. On the 14th, Lieut. Dodd and Sergeant Marcus, on a Curtiss tractor, flew across country 246 miles in 272 minutes, an American non-stop record.

In the Argentine, Senhor Jorge Newbery was reported to have reached the world's record height of 22,470 feet.

In Turkey, four Turkish officers, on two machines, started to fly from Constantinople to Jerusalem.

In Australia, the Minister of Defence for the Commonwealth flew at Melbourne with Mr. Hawker on a Sopwith tractor "tabloid" biplane.

### March.

In March, the Army Estimates were produced and a million pounds was demanded for aviation. The Navy Estimates were produced shortly afterwards, and the sum demanded was £608,000 for aviation, though it was clearly stated that a Supplementary Estimate would be presented later, and that it was impossible to foresee the development of naval aviation.

Mr. Winston Churchill took the chair at the Royal Aero Club dinner and was most enthusiastically received. At the dinner, Captain Longcroft was presented with the Britannia Trophy for the best flight by a British aviator during the previous year.

The Aero Show opened on the 16th, and an interesting feature of it was that the Committee of the Royal Aero Club entertained 120 N.C.Os. and men of the R.N.A.S. and the R.F.C. to lunch as their guests at the show. One of the most interesting machines produced at this period was the small Bristol scout, produced by the combined experience of Messrs. Barnwell and Busted, of the Bristol Co. Though somewhat on the lines of the Sopwith, it was a trifle faster, and although it took some months for the War Office to appreciate it, much excellent work has been done by it in the war. Considerable interest was aroused at the same time by the first published description in this paper of the Short seaplane with folding wings. Much excellent work has been done by this type ever

since, and in the recent raid on Cuxhaven it particularly proved its value for oversea work.

A sensation was caused during the show by the sudden suspension of all flying on B.E. biplanes as the result of agitation following a series of fatal accidents on machines of this type. Flying was only resumed after a careful inspection of each machine and certain alterations in some of them.

On March 24th, in the debate on the Army Estimates, Mr. Joynson-Hicks proved that only 42 aeroplanes of the R.F.C. were fit for use, instead of the 161 claimed by Colonel Secly in February. On March 31st, Colonel Secly, whose reputation had already been shattered by his falsehoods concerning the Royal Flying Corps, was compelled to resign over the question of moving troops into Ulster.

On the 18th, Mr. Norman Spratt raised the British height record to 16,800 feet on a R.E. biplane with an Austro-Daimler engine. For some strange reason this record has never been homologated.

On March 26th, five Hendon pilots, Messrs Carr, Goodden, Hall, Strange, and Noel, looped the loop in one day. Mr. Hall did so on a standard Avro. On the 28th, Herr Thelen, with his Albatros, 100-h.p. Mercedes, visited Hendon, where the construction of the machine and its flying "earned general admiration."

On the 31st, Mr. Norman Spratt, on an R.E., rose to 18,900 feet. The record has not yet been homologated. Eng.-Lieut. E. F. Briggs, R.N., had reached 15,000 feet on a Blériot earlier in the month, and this still stands as record.

Progress in German aeronautical work continued with rapidity during the month. On March 12th a complete list was published in THE AEROPLANE of all Zeppelins then fit to fly. These were as follows ("L Z." represents the Zeppelin shop number; the letter "Z" by itself indicates a military number, and "L" alone a naval number. The word "Ersatz" means that a ship replaces one of the same number which has been destroyed):—

L Z. 9 (Z II); L Z. 12 (Z III); L Z. 16 (Z IV); L Z. 19 (Ersatz Z I); L Z. 20 (Z V); L Z. 21 (Z VI); L Z. 22 (Z VII); L Z. 23 (Z VIII). L Zs. 11, 13, and 17, the "Viktoria Luise," "Hansa," and "Sachsen" belonged to a private transport firm. Late in the previous year Naval Zeppelin L I had been destroyed in a squall over the North Sea, and L II had been burnt at Johannisthal. In consequence, L Zs. 13 and 17 ("Hansa" and "Sachsen") were taken over by the Navy. L Zs. 1 to 8, L Z 10 and L Zs. 14, 15 (L I) and 18 (L II) were in one way or another wrecked or scrapped. L Zs. 24 and 25 were then under construction. From this it will be seen that the output of Zeppelins in the last nine months is not so rapid as some people believe. The first Schütte-Lanz airship was out on test on the 9th.

On the 19th, Linnekogel, with a passenger, rose to 4,900 metres (about 16,000 feet). The general activity may be judged from the fact that during the previous month 140 pupils at Johannisthal made 6,045 flights in 157 hours. The German Government also arranged to establish aviation centres in S.W. Africa.

Herr Thelen and three passengers reached a height of 12,140 feet on an Albatros, and on the 24th Linnekogel and one passenger reached 5,500 metres (17,900 feet) on a Rumpler-Taube, 100-h.p. Mercedes.

In France a good deal of flying was done, the most notable flight being that of M. Garaix on the 17th, when he took seven passengers to a height of 1,650 metres (5,350 feet). On the 12th, the Naval Officers Destrem and Lescaille flew from San Raphael to Corsica.

In Italy there was considerable activity with airships and aeroplanes.

In Austria, £8,300 was voted for the cost of the Vienna meeting.

On March 23rd, Mr. Frank McClean and Mr. Ogilvie, on a Short biplane, reached Khartoum.

In Australia, on March 1st and 2nd, Lieuts. Petre and Harrison, of the Australian Army, made the first official flights at Melbourne on a Deperdussin and Bristol respectively.

In India, Sir Beauchamp Duff, C.-in-C., flew with Capt. Massy at Sitapur on a Maurice Farman on March 25th.



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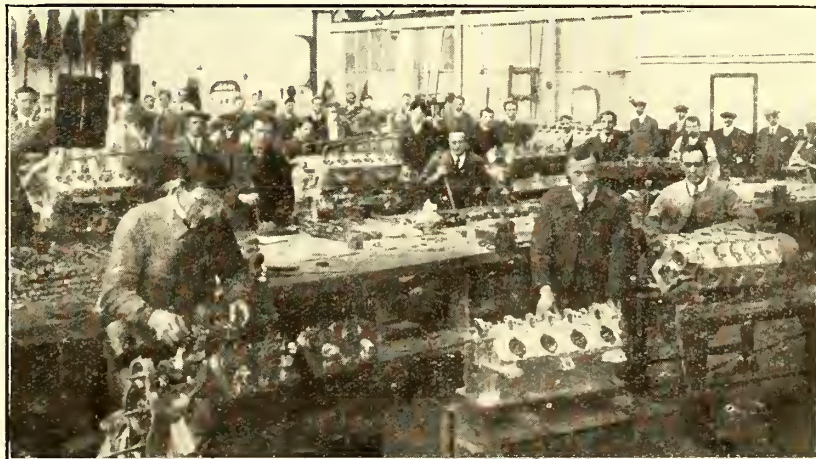
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**April.**

During April certain prohibited areas in the Southampton district were modified by order of the Admiralty, and in this way a distinct impulse was given to the British seaplane industry. Early in the month the Admiralty purchased the D.F.W. biplane which had been flying at Brooklands so as to compare British and German aeroplanes at leisure. The Navy also purchased the Bristol aeroplane repair motor-wagon, which had been shown in Paris and at Olympia. Much work was done by the Royal Naval Air Stations at Yarmouth, Leven, and Dundee, as well as at Felixstowe, Grain, and Calshot, the seaplanes of the Leven station taking part in extensive manoeuvres with a detachment of the Fleet.

The King and Queen crossed the Channel on the 21st to visit the French President, escorted by aeroplanes of the R.N.A.S. and by Mr. Hucks with a cinematographer.

On the 4th, certain officers of No. 2 Squadron, R.F.C., flew from Montrose round Kilmoran Castle to visit Mr. Asquith, who had assumed the position of Secretary for War when Colonel Seely was jettisoned.

Much interest was caused at Brooklands by the flying of Lieut. Collet, R.M.A., on the German D.F.W. biplane, when he showed that the big German machine could really be made to fly. Those who saw his flying will perhaps understand the reason for the "personal ascendancy" ascribed to the British pilots in the war, as it showed that a good pilot on an indifferent machine is better than an indifferent pilot on a good machine.

On Easter Sunday, Mr. Harold Barnwell looped the loop on a Sopwith tabloid, this being by far the highest speed machine on which the feat has ever been performed. During the month the Wight seaplane distinguished itself by putting up a speed range of from 40 to 78 miles per hour. It also climbed a thousand feet in 2 mins. 20 secs., and three thousand feet in 7½ minutes, with a useful load of 950 lbs.

On April 20th, Mr. Howard Pixton won the Schneider water-plane cup at Monaco, this being the first great international race won by a British aeroplane. The Sopwith "tabloid," which was similar in type to the Monaco machine, put up an extraordinary performance by flying with a speed range, officially timed, of between 39.4 and 94.9 miles per hour.

In Germany, on the 2nd, "Z VIII" (L Z.23) reached a height of 10,400 feet, which is a record for a Zeppelin, and it took an hour to reach that altitude. Schütte-Lanz III (Nos. I and II having been destroyed) was out for three hours on the same day. The Potsdam Zeppelin Works began during the month rebuilding the airship "Sachsen" (L Z.17). New D.F.W. two-seaters were produced with a speed range of 51 to 110 m.p.h. It was reported in this paper that three new aeroplane sheds were being erected at Doberitz, one to hold 50 machines, one to hold the aeroplanes for two companies of aviators, and one still larger for reserves.

Early in the month, Lieut. Suren flew a Gotha-Taube for 12 hours and 14 minutes across country. On the 20th, Lieuts. Geyer and Mikulski flew from Königsberg to Berlin, thence to Mulhausen, and thence to Strassburg, covering about 805 miles in 15 hours. Many other long flights by German aviators were chronicled, no flights in this country approaching them in duration.

In France, on the 9th, M. Poulet, on a 60-h.p. Caudron, flew for 12 hours non-stop. He beat this on the 26th by flying for 16 hrs. 29 mins., exceeding Ingold's record by 8 mins. The King and Queen were present at the review at Vincennes on the 22nd, when a number of aeroplanes of the French army escorted them. The much advertised Monaco Rallye started on April 1st and finished on April 21st, producing several long and arduous flights, but being otherwise without interest so far as new types of machines were concerned. M. Garaix and 8 passengers rose to 1,580 metres (5,180 feet) on the Schmitt biplane.

On the 22nd, M. Bider, the Swiss aviator, flew over the Jungfrau.

The Greek Admiralty issued during the month regulations for the Greek naval air service, and several Sopwith seaplanes were supplied to the Greek Government.

**May.**

On May 1st the long-hoped-for Naval and Military Aero-

plane Engine Competition began and proved an absolute farce at first, owing to the testing machinery arranged by the Royal Aircraft Factory being so crudely designed as to be only fit for testing steam-rollers. As a result, various valuable engines were seriously damaged and the progress of the competition was unnecessarily delayed. On the 18th, Squadron-Commander E. F. Briggs, R.N., escorted the Danish Royal yacht into the Medway. On the same day, Prince Henry of Prussia and Mr. Churchill paid a visit together to the Royal Flying Corps at Netheravon. On the 13th, Lieut. Collet, R.M.A., on the D.F.W., left Plymouth at 7.30 a.m. and landed near Grimsby 7½ hours later. On the 11th, 12 aeroplanes of No. 2 Squadron, R.F.C., left Montrose with full complement of mechanical transport on a journey to Salisbury Plain, the journey being made by short stages to fixed points. At the opening of the new course at the Central Flying School six South African officers joined for instruction.

On the 26th, the King and Queen paid a visit to Farnborough and saw 24 machines flying, these representing practically the entire available effective strength of the Royal Flying Corps at that date. At Yarmouth Air Station the Henri Farman seaplane, 100-h.p. Gnome, put up a speed of 67 m.p.h. and climbed a thousand metres (3,250 feet) in 12 minutes. The Sopwith bat-boat built for the German navy, with a 200-h.p. Salmson engine, reached a speed of 78 m.p.h. and flew the length of Southampton Water without control by pilot.

On the 21st the announcement was made that Mr. Gustav Hamel intended to fly the Atlantic on a Martinsyde monoplane, Sunbeam engine. During the month M. Marcel Desoutter, who lost a leg in an aeroplane accident at Hendon the previous year, did some excellent flying on a Blériot lent to him by Lord Edward Grosvenor. On the 19th a dinner was given by the Aeronautical Society in memory of the late Wilbur Wright, and Col. Seely, who, for some unexplained reason, was the guest of "honour," delivered himself of many extraordinary statements concerning military aviation and aeroplanes generally.

In Germany, Lieut. von Scheele left for German Southwest Africa with an Aviatik biplane and a Roland-Taube. Regular flights by German officers constantly took place between Königsberg and Metz, and vice versa. On one occasion a detachment of three machines was dispatched to Potsdam from each of seven air stations, namely: Cologne, Posen, Königsberg, Halberstadt, Metz, Strassburg, and Darmstadt. Despite bad weather, all reached their goal except the Darmstadt detachment, who were prevented by a local storm from starting. At this date German aviation papers, commenting on the Aero Show, ridiculed the finish of British machines, though admitting that they put up fairly good performances. The Prince Henry Circuit, which started on the 17th, produced 40 starters. It finished with much success on the 20th, and no aerial event on a similar scale has ever been attempted in this country.

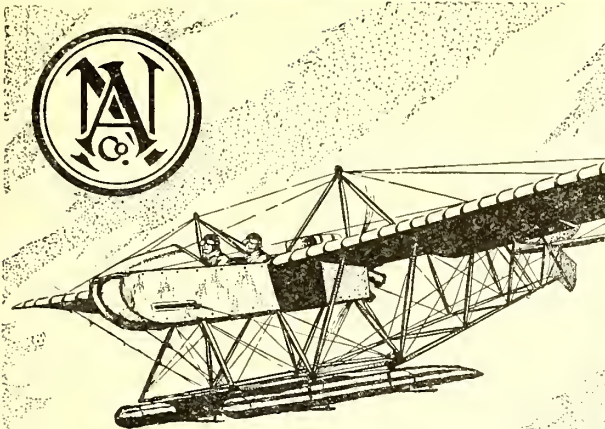
The D.F.W. firm started a branch works at Budapest, and the Albatros a branch at Vienna. The Naval Airship L III (L Z.24) was out on the 18th and reached a height of 3,125 metres (about 10,400 feet) with 17 passengers. Starting on the 22nd, she remained in the air for 34 hours and covered a distance of 1,260 miles, again rising to 10,000 feet. It must be remembered that these heights were only reached with the machine "light."

In France there was an interesting match between M. Legagneux and M. Audemars at Buc. About a dozen seaplanes took part in the French naval manoeuvres in the Mediterranean, and there was good flying in Tunis and Morocco by French military aviators. There was much talk of a number of large airships being constructed. A 900-h.p. Lebaudy, a 1,000-h.p. Astra, a 900-h.p. Clément-Bayard, and a 1,000-h.p. Zodiac were said to be approaching completion. Apparently none of them materialised in time for the war.

On May 28th the tandem monoplane built by Professor Langley in 1903 flew over Lake Keuka, piloted by Mr. Glenn Curtiss.

At a conference held in Paris on "The Liberty of the Air," Prince Roland Bonaparte talked about aeroplanes abolishing frontiers. During the latter part of this year we have seen frontiers abolished in rather a different way, and during the





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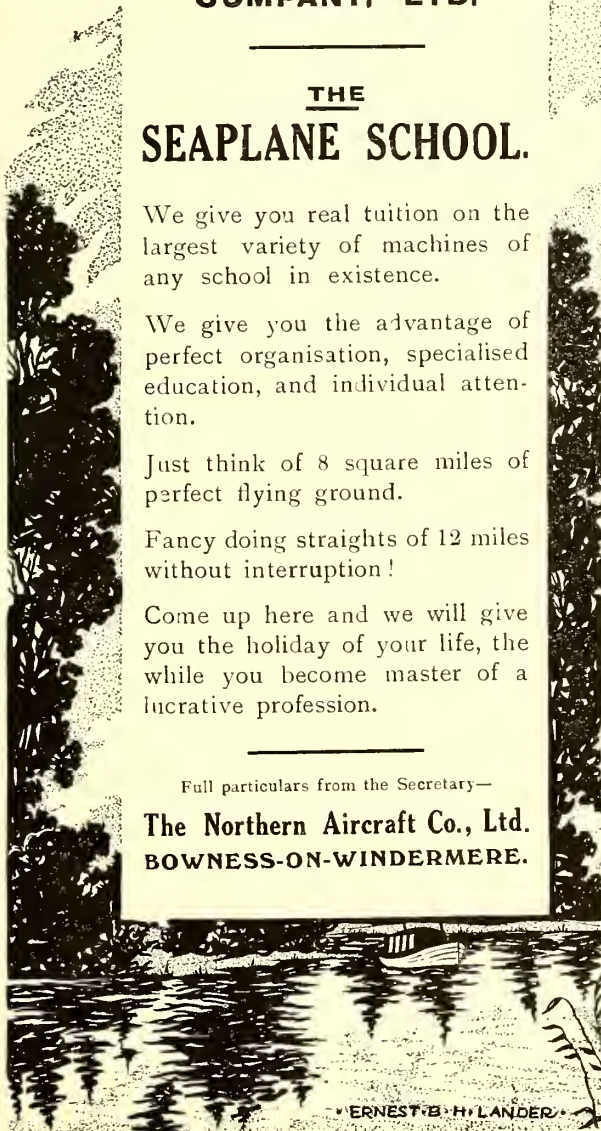
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coming year one hopes to see still further alterations in another direction.

In this month the Government Advisory Committee for Aeronautics published a large volume which it called its Technical Report. Though valuable in many ways, the majority of the information was hopelessly out of date.

During the latter part of the month a "Concourse of Security" took place in France, but proved a fiasco.

#### June.

At the beginning of June five squadrons of the Royal Flying Corps concentrated at Netheravon, 60 or 70 machines being present. B.E.s predominated in number owing to the lack of official encouragement to other makes, and the best and most modern machines made by independent constructors were not represented at all.

On the 9th the Advisory Committee for Aeronautics issued a report on the B.E.4, which had killed two officers of the Royal Flying Corps. In essence, this report constituted an apology for the Royal Aircraft Factory.

The King's Birthday Honours this month included a well-deserved K.C.B. for Brigadier-General Henderson, four brevet majorities for squadron commanders, R.F.C., and a Captaincy for Commander Schwann, R.N. On the 23rd, Major Becke, R.F.C., on an R.E., reached a height of 18,000 feet, but, like Mr. Spratt's record, this has never been homologated. On the 25th the Prime Minister paid an official visit to the Netheravon concentration camp, and on the 26th the late Field-Marshal Lord Roberts and Mr. Churchill, accompanied by numerous foreign military attachés, visited Netheravon, Lord Roberts distributing the prizes won at the R.F.C. sports.

On the 6th the Aerial Derby was won by Mr. Brock on a Morane, with M. Verrier second on a Henri Farman; and on the 20th the London-Manchester race was also won by Mr. Brock, with Mr. Carr second, both on Moranes. Mr. Strange was first at Manchester on a Blériot. On the 12th, Mr. Raynham looped on a standard 80-h.p. Avro. During the month there were numerous exhibitions all over the country.

In Germany there were 35 starters in the Berlin-Leipzig-Dresden flight, as against 8 in the much shorter London-Manchester and back race; and later in the month there were 28 starters in the Eastern Provinces flight. Several German officers visited Vienna and flew publicly there to demonstrate the superiority of German aeroplanes. A hydro-aeroplane meeting on Lake Constance was very successful; no meeting of this kind has yet been held in this country.

On the 14th the military airship, Ersatz Z 1 (L Z.19), was wrecked. At the same time, Z V (L Z.20) was sent into dock at Potsdam to be rebuilt. It is therefore probable that few new Zeppelins have yet been turned out from these works. On the 23rd, Herr Basser, Rumpler biplane, 100-h.p. Mercedes, flew for 18 hrs. 10 mins. without a stop. On the same day Herr Landemann, on an Albatros, 75-h.p. Mercedes, flew for 17 hrs. 31 mins. Finding himself beaten, he started again on the 26th and flew for 21 hours and 50 minutes. None of these duration records have been approached in this country.

In France the new Voisin began to be popular in the army, one escadrille making a tour of 7,000 kilometres on these machines. Much good work was also done on Caudrons. Maurice Farman escadrille No. 8 terminated some weeks of useful training in the control of gunfire at the camp de Mailly. An escadrille of the new Dorand biplanes, armed and armoured, also made a satisfactory tour.

On the 8th and 9th, M. Gilbert, on a Morane, 80-h.p. Le Rhone, competing for the Coupe Michelin, covered 1,400 kilometres on the first day and 1,600 kilometres on the next day, with six hours' rest between. M. Garaix, in the Schmitt biplane, with 5 passengers, put up records from 10 to 150 kilometres, the useful load being 1,338 lbs. On the 26th the airship "Adjutant Vincenot" remained in the air for 35 hrs. 20 mins. beating the Zeppelin record.

On the 20th, M. Sikorsky flew at night for 6 hrs. 33 mins. with 6 passengers. On the same day he had risen to 2,000 metres (6,500 feet) with 10 passengers in 1 hr. 26 mins.

#### July.

At the beginning of July the R.F.C. Camp at Netheravon broke up, after several weeks of most useful training, which

added materially to the efficiency of the Corps. On the 21st, No. 2 Squadron reached Montrose on its return journey, and No. 4 Squadron moved to Fort Grange.

On July 1st the Royal Naval Air Service came into being officially, this being a very important step in the development of Naval aviation. During the week ending July 18th, seaplanes from every Air Station arrived at Calshot to take part in the so-called "Test Mobilisation" of the Fleet, and some 20 machines made a very good display. The true story of the mobilisation may be told at some later date. The seaplanes returned to their stations about July 25th, but the Fleet was kept on a war footing till war broke out.

Lieut. Gran, of the Norwegian Navy, flew a Blériot from Aberdeen to Norway on the 30th.

The London-Paris and back race from Hendon on the 10th was won by Mr. Bröck, with M. Garros 2nd, both on Moranes. Six started and only two finished. In the last week of the month exhibitions of flying were in progress at eleven places at once, indicating some popular interest in aviation.

In France, the best the Army could do was to produce 22 machines at the Longchamps Review. The Caudron Co. produced an excellent armoured biplane, which is now being adopted by the French Army. On the 11th M. Rugère took 3 passengers on a Voisin (135-h.p. Salmson) to 3,400 metres. The French War Office decided to hold competitions for military aviators—a sensible idea.

In Germany on the 10th Reinhold Böhm, on an Albatros (75-h.p. Merc.), flew for 24 hrs. 12 mins. without a stop, at an estimated speed of 47½ m.p.h., covering 1,350 miles.

On the 14th, Oelerich, on a D.F.W. (100-h.p. Merc.), rose to 7,850 metres (25,756 ft.), beating the World's record by over 5,000 feet. The machine weighed 1,650 lbs. empty, and with full military load climbed 780 ft. per minute. This may indicate why our aviators find a difficulty in catching modern German machines.

Basser, on a Rumpler biplane (100-h.p. Merc.), flew from Berlin to Constantinople via Budapest, Sofia, and Bucharest, in 18 hrs. 12 mins. flying time.

Four new Zeppelins were ordered this month, bringing the series numbers to L Z29. On the 15th L Z25 (Z IX) was out on test, and proved very silent.

German officers landed in Belgium at Namur, and in France, and a Zeppelin (Z IV) flew into Russia and was fired at. Also French aviators landed in Germany, and feelings all round became strained.

In Austria, at the Vienna Meeting, Austrian and German machines beat everything else, except that the Caudron scored in getting off quickly and in climbing. The Bristol scout was the fastest machine there, but had engine trouble. Thus the Germans scored in organisation and preparedness.

In Italy a Bill was before Parliament to re-organise military aviation.

In the U.S.A. a list of very stringent tests for military aeroplanes was issued, and ultimately the only machine to pass them was the Curtiss.

The outbreak of war practically at the end of July put a stop to everything except military aviation, and on August 1st a Home Office Order was issued prohibiting civilian flying except at aerodromes. Therefore, it is proposed next week to complete this review as a purely naval and military affair.

#### For the Troops.

Miss A. F. Taylor, writing from 26, Bold Street, Southport, says:—"It may possibly interest those readers who have sent me copies of THE AEROPLANE to know that I have received an average of forty up-to-date copies weekly, as well as a very considerable number of older copies, and also numerous other journals and magazines each week.

"They have all been disposed of, and appreciated, and I know, read. I should like now to thank those readers whose papers have not yet been acknowledged, and to ask for a continuation weekly, until the end of January."

It will be remembered that Miss Taylor asked some time ago that readers would send her their copies of THE AEROPLANE for the reading-rooms opened for the new regiments of "Kitchener's Army" at Southport.

## Naval and Military Aeronautics.

### GREAT BRITAIN.

The following appeared in the list of New Year's Honours in the "London Gazette" of December 31st:—

The King has been graciously pleased to give orders for the following appointments to the Distinguished Service Order and for the Award of the Distinguished Service Cross in respect of the undermentioned officers:—

#### TO BE COMPANIONS.

Squadron Commander Edward Featherstone Briggs, Royal Naval Air Service.

Flight Commander John Tremayne Babington, Royal Naval Air Service.

Flight Lieutenant Sidney Vincent Sippe, Royal Naval Air Service.

### NAVAL PROMOTIONS.

The following promotions have been made:—

#### COMMANDERS TO BE CAPTAINS.

William Leslie Elder (now holding the acting rank of captain), Francis Rowland Scarlett (now holding the acting rank of captain).

#### LIEUTENANT-COMMANDER TO BE COMMANDER.

Frederic Lewis Maitland Boothby (now holding the acting rank of commander).

#### ROYAL NAVAL AIR SERVICE.

The following promotions have been made:—

Squadron Commanders to be Wing Commanders.—Eugene Louis Gerrard, Arthur Murray Longmore.

Flight Commanders to be Squadron Commanders.—Charles Edward Henry Rathborne, Douglas Austin Oliver, John Norman Fletcher, James Lindsay Travers, Thomas Reginald Cave-Browne-Cave.

Flight Lieutenants to be Flight Commanders.—Arnold John Miley, William Charles Hicks, Edward Osmond, William George Sitwell, Charles Robert Finch Noyes.

Flight Sub-Lieutenants to be Flight Lieutenants.—Philip Leslie Holmes, John Philip Wilson, James Douglas Maude, Ernest Victor Samuel Wilberforce, Evelyn Ronald Whitehouse, Harry Stewart, Anthony Rex Arnold, Denys George Murray, Norman Sholto Douglas, George Bentley Dacre, Ralph James Jean Hope-Vere, Bernard Crossley-Meates, Walter Hugh Stewart Garnett, Ralph Whitehead, Harold Rosher, the Honourable Desmond O'Brien, Edward Gordon Riggall, Gordon Lindsay Thomson, Irving Henry Bebbly Hartford.

Flight Sub-Lieutenants for Temporary Service to be Flight Lieutenants for Temporary Service.—Vivian Gaskell Blackburn, Harold Austin Buss, George Cyril Colmore, Allan Knighton Robertson. All dated December 31st, 1914.

### THE ORDER OF THE MILITARY CROSS.

A Royal Warrant has been issued under date January 1st instituting a new decoration entitled "The Military Cross." It is to consist of a cross of silver having on each arm the Imperial Crown and bearing in the centre the letters G.R.I. No person shall be eligible for this decoration unless he is a captain, a commissioned officer of a lower grade, or warrant officer in the British Army or Indian or Colonial Military Forces, and the Cross shall be awarded only to officers of the above ranks on the recommendation of the Secretary of State for War. Foreign officers of an equivalent rank to those mentioned above, who have been associated in military operations with the British, Indian, or Colonial Forces, shall be eligible for the Honorary award of the Cross. The Military Cross shall not confer any individual precedence and shall not entitle the recipient to any addition after his name as part of his description or title.

The King has been graciously pleased to confer the Military Cross upon the undermentioned officers and warrant officers, who have been duly recommended for the same under the terms of the Royal Warrant:—

Lieutenant (temporary Captain) A. H. L. Soames, 3rd Hussars (Flight Commander, Royal Flying Corps, Military Wing).

Lieutenant (temporary Captain in Army) C. W. Wilson, Royal Flying Corps, Special Reserve.

Lieutenant (temporary Captain in Army) E. L. Conran, 2nd County of London Yeomanry (Flight Commander, Royal Flying Corps, Military Wing).

Sergeant-Major D. S. Jillings, Royal Flying Corps (Military Wing).

Sergeant-Major J. Ramsay, Royal Flying Corps (Military Wing).

Sergeant-Major E. J. Parker, Royal Flying Corps (Military Wing).

### COMPANION OF THE D.S.O.

His Majesty the King has been graciously pleased to approve of the appointment of the undermentioned officer to be a Companion of the Distinguished Service Order in recognition of his services with the Expeditionary Force specified below:—

Lieutenant (temporary Captain) Donald Swain Lewis, Royal Engineers, and Royal Flying Corps.—For valuable information repeatedly furnished to the Royal Artillery in regard to the position of the enemy's guns. His direction of our artillery fire, whilst flying, has constantly led to direct hits on the enemy's batteries and the silencing of their guns.

\* \* \*

### From the "London Gazette," December 29th, 1914.

ADMIRALTY, December 27th.

ROYAL NAVAL AIR SERVICE.—The following probationary flight sub-lieutenants have been confirmed in the rank of flight sub-lieutenant: Reginald Egcott Nicoll. Dated September 7th, 1914. David Keith Johnston. Dated September 11th, 1914. Archibald Spencer Maskell. Dated October 12th, 1914.

Assistant Paymaster Francis Knox Haskins to be flight lieutenant. Dated October 3rd, 1914.

\* \* \*

A Second Supplement to the "London Gazette" of December 29th, published on December 31st, contains the following military appointments:—

WAR OFFICE, December 31st.

REGULAR FORCES.—Supplementary to Regular Units or Corps.—Royal Flying Corps (Military Wing):—

Second Lieutenant James Valentine to be lieutenant. Dated November 11th, 1914.

John Claude Horsey Barfield to be second lieutenant (on probation). Dated December 28th, 1914.

\* \* \*

The subjoined memorandum from the Director of the Admiralty Air Department appears in a supplement to the "London Gazette" published on December 31st:—

December 17th, 1914.

On November 21st, 1914, Squadron Commander E. F. Briggs, Flight Commander J. T. Babington, and Flight Lieutenant S. V. Sippe, Royal Navy, carried out an aerial attack on the Zeppelin airship sheds and factory at Friedrichshafen on Lake Constance. Leaving French territory shortly before 10 a.m., they arrived over their objective at about noon, and, although under a very heavy rifle, machine-gun, and shrapnel fire from the moment they were sighted, they all three dived steeply to within a few hundred feet of the sheds, when they released their bombs—in all eleven.

Squadron Commander Briggs was wounded, brought down, and made a prisoner, but the other two officers regained their starting-point after a flight of more than four hours across hostile country under very bad weather conditions. It is believed that the damage caused by this attack includes the destruction of one airship and serious damage to the larger shed, and also demolition of the hydrogen-producing plant, which had only lately been completed. Later reports state that flames of considerable magnitude were seen issuing from the factory immediately after the raid.

\* \* \*

### From the "London Gazette," January 1st, 1915.

ADMIRALTY, December 30th.

The following lieutenant has this day been promoted to the rank of lieutenant-commander in his Majesty's Fleet: Arthur Murray Longmore.



WAR OFFICE, January 1st.

REGULAR FORCES.—Commands and Staff.—The undermentioned appointment is made:—

Railway Transport Officer (graded for purposes of pay as Staff Captain).—Lieut. Frederick William Abraham, Royal Naval Air Service, and to be temporary lieutenant. Dated December 10th, 1914.

SUPPLEMENTARY TO REGULAR UNITS OR CORPS.—Royal Flying Corps (Military Wing).—Frank Sowter Barnwell to be second lieutenant (on probation). Dated December 9th, 1914.

\* \* \*

A Supplement to the "London Gazette" of January 1st, published on January 2nd, contains the following military appointments:—

WAR OFFICE, January 2nd.

REGULAR FORCES.—Supplementary to Regular Units or Corps (Military Wing).—The undermentioned second lieutenants to be lieutenants: Charles G. Bell. Dated December 1st, 1914. Arthur V. Bettington. Dated January 3rd, 1915.

\* \* \*

A Third Supplement to the "London Gazette" of January 1st, published on January 4th, contains the following military appointments:—

WAR OFFICE, January 4th.

REGULAR FORCES.—The undermentioned warrant and non-commissioned officers to be second lieutenants, for service in the Field:—

ROYAL REGIMENT OF ARTILLERY.—Dated January 5th, 1915: Sergeant-Major Norman Goldsmith, from Royal Flying Corps, and to be seconded for service with that corps.

THE PRINCE OF WALES'S OWN (WEST YORKSHIRE REGIMENT). Dated December 11th, 1914: Sergeant-Major David Samuel Jillings, from Royal Flying Corps, and to be seconded for duty with that corps.

ESTABLISHMENTS.—ROYAL FLYING CORPS (Central Flying School): The undermentioned temporary appointment is made: Captain Duncan Le G. Pitcher, 39th King George's Own Central India Horse, Indian Army, from an officer in charge of transport (graded as flight commander), to be an instructor. Dated January 5th, 1915.

MEMORANDA.—The undermentioned to be temporary major. Dated January 5th, 1915: Lieutenant (temporary Captain) Thomas G. Hetherington, 18th (Queen Mary's Own) Hussars.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR UNITS OR CORPS.—ROYAL FLYING CORPS (Military Wing).—The undermentioned second lieutenants (on probation) are confirmed in their rank: A. M. Wynne and T. F. D. R. Aikman.

NAVAL.

The following appointments were made at the Admiralty on January 1st:—

ROYAL NAVAL VOLUNTEER RESERVE.—The following have been promoted to be temporary lieutenants, R.N.V.R., with seniority December 31st:—B. A. Isaac, C. L. R. Aspinall, R. Purves, M. J. James, and F. A. Brock.

ROYAL NAVAL AIR SERVICE.—Acting Flight Lieutenant R. H. Jones has been confirmed in the rank of Flight Lieutenant, with seniority of November 12th, and appointed to the "Pembroke III," for R.N. Air Service, to date December 21st.

\* \* \*

The following appointments were made at the Admiralty on January 4th:—

ROYAL NAVAL AIR SERVICE.—The following have been entered as flight sub-lieutenants, with seniority January 4th, and appointed to the "Pembroke III" for the Royal Naval Air Service: C. E. Wood, E. de Courcey Hallifax, C. Johnson, G. W. Hilliard, R. C. Potter, and R. H. Routledge.

Temporary Surgeon G. C. Scott, M.D., to the "Pembroke III," for Royal Naval Air Service, to date December 31st.

\* \* \*

Among the special promotions in the Navy in the list of New Year's Honours will be noted Captain Elder, R.N., who is Inspecting Captain of Aircraft Under Construction, and of Captain Scarlett, R.N., Inspecting Captain of Aircraft and in charge of the Central Air Office at Sheerness, both being promoted from Acting Captain to Captain.

Commander Boothby, R.N., is promoted to Commander from Lieutenant-Commander and Acting Commander. Commander Boothby is the officer commanding the Armoured Car Brigade.

By promotion from Squadron Commander to Wing Commander, Major Gerrard, R.M.L.I., will presumably become temporary Lieut.-Colonel, R.M.L.I., and similar promotion to Squadron Commander Longmore, R.N., gives him rank as Commander, R.N. It will be noted that in the "Gazette" of January 1st, the Admiralty Gazette, dated December 30th, promotes Commander Longmore from Lieutenant to Lieut.-Commander, R.N., and he had already been promoted to acting Lieut.-Commander early this year. These two last mentioned officers were among the four first officers under the Admiralty to learn flying, which they did on Short machines lent to the Admiralty by Mr. Frank McClean, now Flight Lieut., R.N.

Promotion to Squadron Commander presumably makes Captain Rathbone, R.M.L.I., temporary Major.

Lieutenant Oliver, R.N., who becomes a Squadron Commander, will be remembered as commanding at Cromarty after Lieutenant Longmore left.

Captain Fletcher, R.E., of the Naval Airship Section, also becomes temporary Major in accordance with his rank as Squadron Commander.

Flight Commander J. L. Travers, promoted to Squadron Commander, is a wonderful example of the rapidity with which merit wins promotion in the Air Services, as he only joined what was then the Naval Wing of the Royal Flying Corps, a matter of two years ago, and now ranks as Lieut.-Commander, R.N., and with a Major in the Army.

Flight Commander Cave-Browne-Cave, also promoted to Squadron Commander, was an Engineer-Lieutenant, R.N., and has done excellent service with airships.

It will be noted with pleasure that the three Friedrichshafen raiders have been appointed to the D.S.O., as well as receiving the French Cross of the Legion.

One may perhaps be permitted to suggest that many people will regret to note the omission from this somewhat lengthy list of awards for good service in the R.N.A.S. the name of the officer who has been at the head of the Naval Air Service since its beginnings, and whose excellent policy in governing of the Service has not only brought it to such a high state of effectiveness, but has actually kept alive many of the aeroplane manufacturers in this country, and so has ensured an adequate supply of aeroplanes for both Services.

\* \* \*

Stories of the raid on Cuxhaven get through somewhat slowly, and, of course, it would not be advisable to tell anything of any real military value, but certain of the minor incidents are too humorous to be wasted. Some of the machines on reaching their objective flew exceedingly low, apparently because the clouds compelled them to do so in places, and also because there is quite good reason for believing that a high-speed machine is as hard to hit when it is low down as when high up. Apparently these machines were so low that the Germans thought they were their own, and in the words of one pilot he could absolutely see the people open their mouths with surprise when they spotted the Union Jacks under the wings.

Somehow, when one is in an aeroplane, it is always excruciatingly funny to see people running frantically to get out of its way, and it is said that some of the aviators nearly fell out of their machines through laughing at the sight of stout and elderly Germans apparently doing their best to break all cross-country records.

It is also said that one pilot, who at all times is an exceptionally fine flier, encountered a big battleship, on which he dropped his last remaining bombs, then throttling down his engine dived straight for the ship's deck as if to ram it. A few hundred feet above it he hurled at it the last loose and throwable thing within reach, a large woolly goliwog mascot, after which he sheered off homeward. He was so amused at his own performance that he nearly stopped his engine in the process. One would give quite a good deal to hear the opinions of the Germans who picked up the mascot. They must cer-

tainly have acquired the opinion that all British aviators are perfectly mad. Probably, viewed from underneath, at a certain altitude it looked almost as if the pilot had fallen out of his machine.

\* \* \*

An officer who was engaged in the raid on Cuxhaven on Christmas Day writes home as follows:—

"More beautiful than any pantomime, two vast silvery Zeppelins came floating over, in and out amongst the fleecy clouds. One of the cruisers opened on Zeppy not with an aircraft gun but with the common or garden six-inch. I had no idea these could, as they did, burst shrapnel shell right up in the clouds, amongst which she was dodging. But so it was, and the huge silver-sided craft shoved off for home at a frantic pace, even as a strange dog to his kennel should a boy throw stones at him."

[One of the "Zeppelins" appears to have been a Schütte-Lanz, and an aviator describes it as fairly sitting on its tail with fright when a seaplane went for it. It shot skyward very fast, and the seaplane, having something else to do, proceeded on its journey.—Ed.]

\* \* \*

One story of the raid on Cuxhaven is told in the "Morning Post" by an officer of one of the seaplane carrying ships. He says that of all the happy Christmas mornings he has spent that of 1914 will for ever be remembered as the happiest, because he had the honour of assisting in showing the Germans that England was quite capable of digging their fleet out when the order came to do it. "We started," he said, "from somewhere off the East Coast, and, although our actual destination was not known to many on board, we had an idea that we were out to show the Germans that we could make raids upon their country quite as easily as they had done upon England. We had for company our sister ships, three light cruisers, a flotilla of torpedo vessels, and submarines. It was just before daylight when we arrived off Helgoland, to our surprise, without let or hindrance. Round the island we went, skirting the minefield, and in some cases actually crossing it, but so admirably was the course kept that there was nothing doing. When we were approaching Cuxhaven we hoped we should sight some of the much-vaunted fleet of the enemy, but no such luck; they evidently preferred the shelter of the Kiel Canal. We quickly slung the waterplanes outboard and lowered them to the surface of the sea. Having performed our duty, our vessels dropped away under the shelter of the cruisers and watched the airmen getting ready to deliver their Christmas greeting to the enemy. With a rush the planes were off and quickly climbed to a height of over 2,000 feet. We followed their progress to the shore and soon noticed a column of smoke rise from where we judged Cuxhaven to be, but owing to a heavy sea mist, which had got up with the sun, the view was obscured. Still no word from the Germans, and, with the exception of two airships which we saw in the dim distance, we were left severely alone. What the airmen did has already been told." [This communicative young gentleman was evidently out of luck, because some of the seaplane ships had excellent fun. One learns that the bomb-dropping by the German seaplanes—from well over 4,000 feet—was quite good, and, though they hit nothing, their bombs, dropped in lots of three, "straddled" the ships on several occasions. The Germans themselves were not hit, but they provided good sporting shooting. The Zeppelins were less amusing, as they sheered off at the first shots, but the German submarines apparently kept things from being dull. From all other accounts it seems to have been quite a merry Christmas.—Ed.]

\* \* \*

Flight Commander Hewlett reached England on Sunday, January 3rd. Everyone will congratulate him on his good fortune.

Mr. Maurice Hewlett received a telegram on the 31st from his son, dated from Ymuiden, in Holland. It gave no particulars, save that he had arrived safely in that country. Mr. Hewlett had, however, received a message from the Admiralty to the effect that his son was landed from a Dutch trawler.

It was reported from Amsterdam on January 1st that the King had sent the following telegram to Lieut. Hewlett, who was then with the British Consul at Ymuiden:—

I am delighted and greatly relieved to hear that you are safe, and I heartily congratulate you.

GEORGE R.I.

The following letter appeared in the "Morning Post":—

"Sir,—Will you allow me to express, through you, our heartfelt thanks to the innumerable friends, known and unknown, who have sympathised with us in trouble and now share our relief. I have never, personally, been so hard hit before, and have to confess that I did not know that there was so much kindness and goodwill in the world. My wife and I are deeply grateful.—Yours, &c.,

MAURICE HEWLETT.

"7, Northwick Terrace, Jan. 1st."

The following account of Lieut. Hewlett's adventure was sent by the "Morning Post's" correspondent from Amsterdam on January 1st:—"Flight Commander Francis E. T. Hewlett, the only British seaplane pilot who was missing after the raid on Cuxhaven, has been rescued in the North Sea by a Dutch trawler and arrived at Ymuiden last night. He declared in an interview that, having started with other pilots from a point in the vicinity of Helgoland, he reached a considerable height and pursued his way along the coast of Schleswig. Owing to fog he lost Cuxhaven from sight and flew over German territory without succeeding in getting his bearings. He saw a Zeppelin shed, and, descending sufficiently for the purpose, dropped some bombs. The Germans fired at the seaplane, but without hitting it. Commander Hewlett [The rank is given by the "Morning Post."—Ed.] then flew in the direction of the British squadron, but on reaching Helgoland he discovered only German warships. He descended again and dropped the remainder of his bombs. One of them fell on one of the largest ships, but the airman could not see whether the explosion caused any damage. Commander Hewlett continued to look for the British squadron, but was obliged to descend to the surface of the sea owing to a defect of his motor. He remained on the surface for about six hours, and was picked up by a Dutch trawler on Christmas morning. Before leaving his seaplane he took care to destroy the motor."

The "Globe" credits Lieut. Hewlett with stating that he was "in command of" nine seaplanes but that only eight got away, one engine refusing to start. As a matter of fact two engines jibbed and only seven started. Everyone will sympathise with the two unhappy officers who were left behind, and will wish them better luck next time.

One wonders just why the Censor passed quite as much information on this subject as he did in the daily press, except that, as the news came from Holland, presumably Germany already knew it. And one sympathises with Lieut. Hewlett in the amount of undoubtedly unwelcome publicity brought upon him by his misadventure.

\* \* \*

A marriage has been arranged between Flight Commander Edward Osmond, R.N., Royal Naval Flying Corps, only son of the late Edward Osmond, Rewe, Devon, and Emily Doris, youngest daughter of J. H. W. Davies, Minden, St. John's Park, Blackheath.

\* \* \*

Colonel and Mrs. Walter Beevor and family wish to thank all their kind friends for the letters and telegrams of sympathy sent to them in their recent great sorrow, and hope they will all accept their grateful acknowledgments.

\* \* \*

The correspondent of the "Morning Post" at Christiania reported on December 30th:—

"The owner of the Bergen steamer "Oern," which is at present at Rotterdam, reports that she had the opportunity lately of saving two English aviators about mid-way between England and Holland, north-east of the Galloper Bank, where the steamer observed them with a floating aeroplane, obviously in distress. The captain hurried to take the men and the machine on board. During their flight over the sea the motor failed, obliging the men to descend to sea level, where they



drifted helpless for seven hours before being rescued. The aviators were put ashore at the Hook of Holland and the aeroplane was brought to Rotterdam."

[It appears as if this was an inaccurate report of the picking up of an officer and a naval rating by the Flushing boat recently.—Ed.]

It is reported that the British aviator who recently descended in Holland and was interned was Flight Lieutenant Rainey, R.N., and that he had lost his way in a fog.

On Sunday, January 3rd, Sopwith land tractor, 104, piloted by Flight-Commander Fowler, descended in Barking Park, brought down by a severe snowstorm. Apparently the machine was from Eastchurch. The pilot re-started shortly before dark, having some trouble in getting his engine going.

The work done for the comfort of the men of the Royal Naval Air Service continues to be heartily appreciated by the men. Mrs. Sueter has received a letter from Lieut.-Colonel E. Maitland, O.C., Naval Airship Section (in France), saying:—"The petty officers and ratings of the Airship Detachment have asked me to write you this letter to express their gratitude and appreciation of the gramophone and records you so kindly sent." Lieut. W. L. Samson, R.N.V.R., writes:—"I beg to thank you once again on behalf of my brother and all the men of the R.N. Flying Corps stationed here for your kindness in sending things for our use and comfort."

Flight-Commander H. Fawcett, R.N. (Capt. R.M.L.I.), writing from a very lonely Northern Air Station, says—"Very many thanks indeed on behalf of this Air Station. The gramophone arrived this morning in good condition. I can assure you it will be much appreciated. I certainly shall be most grateful, as we are all living in an aeroplane shed, and at present the only instruments are a mouth organ and a one-stringed fiddle!" These are only a selection from the letters Mrs. Sueter has received from the recipients of the gramophones which were sent to the different Air Stations as a Christmas surprise.

Two hundred mufflers of various brilliant hues, and, therefore, unfortunately useless to the R.N.A.S., are being sent as a gift to the Armoured Car Brigade.

The following cash contributions have been received this week:—Mr. H. Sherwin Holt, £15; Flight-Lieut. and Mrs. DelaCombe, £3 3s.; White and Thompson, Ltd. (employees' 3rd contribution), £3 2s. 6d.; Miss C. Churchill, £1; Mr. Caling, 10s.; Mr. A. Michell, 10s.; total for week, £23 5s. 6d.; grand total, £595 9s. 3d.

#### MILITARY.

It is with great regret that one has to record the death of Captain Walter Lawrence, R.F.C., and 7th Battn. Essex Regt., who is reported to have been killed in an aeroplane accident in France last week.

Walter Lawrence, born on May 10th, 1891, was one of the earliest pilots of the R.F.C., and certainly one of the very best fliers this country has ever produced. He took his certificate, No. 113, on August 1st, 1911, at Salisbury Plain on a Bristol biplane, and afterwards flew a good deal on a Blackburn monoplane. He was appointed to the R.F.C. on December 6th, 1912, and from that time forward steadily won the esteem of his brother officers, not only by his unquestioned skill as a flier but by his unfailing good temper, his keenness for his work, his genuine goodness of heart, and his curious sense of humour.

It is stated by those closely connected with Captain Lawrence that he was, in fact, Count Lawrence (Lorenzo) Walter Falconi, being an Italian by birth, the son of an Italian father and an English mother. He was educated chiefly in Paris, and became a naturalised British subject at an early age under the name of Walter Lawrence. His parentage probably accounts for his being such a fine and fearless pilot.

The quality of his flying in the early stages of the war won for him mention in despatches and promotion to Flight-Commander, with temporary rank of Captain, on August 7th, 1914.

The cause of his death is not definitely known, but one may rest assured that it was not caused through any fault of pilot-

ing, for though Captain Lawrence did extraordinary things in the air, every manœuvre was made with such skill and delicacy of touch that he never strained his machine unduly.

His death will be genuinely mourned by all of the R.F.C. who came in touch with him, and all will offer sincere sympathy to the deceased officer's relatives.

The following casualty in the Expeditionary Force is reported from General Headquarters under date December 30th: MISSING.—Picton-Warlow, Captain W., Royal Flying Corps.

CHRISTIE—MILLER.—On December 24th, quietly, owing to the war, at Emmanuel Church, Clifton, by the Rev. Canon Hemming, Captain Archibald Christie, R.F.A., Royal Flying Corps, elder son of the late Archibald Christie, I.C.S., and of Mrs. Hemsley, Olden Lodge, Clifton, to Agatha Mary Clarissa, younger daughter of the late Frederick Miller, of New York, and of Mrs. Miller, Ashfield, Torquay

The award of sundry of the new Military Crosses and a single D.S.O. to the Royal Flying Corps in the New Year's Honours is more remarkable for its omissions than for its generosity. Those officers to whom crosses have been given thoroughly deserve them for the work they have done, but there are several others equally worthy of notice. It is, however, very satisfactory to see that recognition has been made of the excellent work done by the N.C.O.'s of the Flying Corps, for no one has contributed more to the efficiency of the corps nor has had a more difficult task in manufacturing soldiers out of the material available than the sergeants who were first drafted to the Flying Corps from the Regular Army.

Mr. F. S. Barnwell, who has been appointed to the Royal Flying Corps on probation, is a brother of Mr. Harold Barnwell, the well known Vickers pilot. He took his certificate a few weeks ago, and gives promise of being an excellent flier. His experience of aeroplane design and construction is, however, so great that one hopes that he will not be wasted merely as a pilot, but that his knowledge will be used for the betterment of the matériel of the Flying Corps. It was he who was largely responsible for the excellent workmanship in Bristol machines during the past two years or so, and he was also responsible for the high aerodynamic qualities of the Bristol scout, which is now doing so well on active service.

Another member of the Bristol firm who is now in the King's Service is Mr. Arthur Stone. He was formerly Sir George White's private secretary, and of late years he has done much good work in the business management of the Bristol firm. Mr. Stone is an officer of artillery, and many of those who have met him in the past will be surprised to hear that he is only returning to a branch of the Service in which he has served for many years, and that he wears the South African and Chinese medals, for despite his Service experience Mr. Stone was the last person in the world to say anything about it. The appointment of Mr. Thurston of the Bristol Co. to the R.N.V.R., attached Naval Air Service, has already been noted, so the Bristol Company may well be congratulated on patriotically allowing three such valuable members of the staff to leave the firm, even for a higher form of employment, for their services will certainly be severely missed.

On Monday it was rumoured all over London that a large fleet of Zeppelins had been seen over the East Coast, chiefly at Chelmsford. No confirmation of the rumour is obtainable, so probably the story arose from some of our own aeroplanes having been seen in the neighbourhood of Chelmsford. The average country bumpkin, even in uniform, still cannot distinguish between an aeroplane and an airship.

The Letchworth "Citizen" reports that on Monday, 28th, a biplane belonging to the Royal Flying Corps landed on the east side of William Way. The machine had started from Fowlmere, some fifteen miles away, and according to the newspaper report it struck a tree in ascending, breaking a rib. The pilot carried on to Letchworth, but decided to come down on account of the low-lying clouds. He landed safely, though, unfortunately, in



a wet stubble field. The machine was anchored out in Monday's blizzard, and was repaired on Tuesday, but it was not until Wednesday afternoon that the ground was sufficiently hard for it to re-start, and, then, without a passenger. As far as can be gathered from local "experts" the machine was a piebald B.E. or R.E.

\* \* \*

A Garrison Gunner, writing on Christmas Day, says:—

"The weather still continues very boisterous and stormy. Yesterday morning one of the German captive balloons used for observation purposes broke away in the wind. We saw it going eastward at about 40 miles an hour, and, as the unfortunate occupants of the car have no means of emptying the envelope of gas, they may possibly land in Russia. These balloons are immense things, some 200 feet in length, and are like a sausage, which name has been applied to them by Tommy."

\* \* \*

One who was formerly closely identified with aviation in the North writes:—"Will you be surprised to hear I am still alive? Anyway, I am, in spite of the efforts of 'J.J.'s' and shrapnel. Disgusting things, Johnsons, they are so black and dirty, and intrude themselves so often where they are unwanted. I made their acquaintance when I had been out here two weeks. One of the species walloped over the top of my ambulance when we were standing at the cross roads behind a battery of R.H.A., and caught one of our chaps in the thigh. I ran to the hole (which, by the way, was large enough to bury an ambulance and team in) and picked up some pieces of shell, so hot that I had to change them from one hand to another. The nearest squeak I have had yet was in — (sorry I cannot say the name), and two shells came either side of the street, knocking the houses down and setting them on fire. But we got away and into the station square, when we were again shelled.

"I have seen Commander Samson dozens of times here; in fact, we have the nickname of 'Samson's Escort,' for wherever his armoured train is we are sure to be. He is a perfect devil for danger; fires his guns and away down the line like hell, and a little later over come the German shells up against our column. They have only killed one man and wounded another, and smashed an ambulance with its horses so far of our lot, but the rotten part is we cannot smack back, and yet we get their shells liberally. One thing is certain, sir, and that is, in the next war I shall be in the Flying Corps if possible, or at any rate a motor cyclist. [A pleasing reference this to "the

next war," for those who regard this little affair as the real Arrageddon. It is surprising how cheerfully officers and men alike talk about "the next war."—Ed.]

"I saw a Rumpler (Dove?) biplane over our lines one morning, and as she reached the artillery three puffs of black smoke emanated from her, and not five minutes later came the whirr and screech of a shell and a piece of the woods disappeared. Oh! the aeros are great for reconnaissance, but as for fighting their like, well I have seen a Taube get away from a Farman easily, in spite of a machine gun being fired from the latter. It was pretty and interesting, but hardly useful.

"Have you seen the Voisin biplanes the French are using? They are about 45 feet span and have a right angled triangle extension at the rear of the upper main plane, which is used as an aileron. The machines are clumsy and rock horribly, and cannot compare with the Avros, B.E.s and Farmans, nor with the Parasol Moranes. I saw a B.E. do a beautiful spiral over the lines in a glowing morning sun, and I admired the pilot more than I ever admired any man, for it was great. Eighty degrees was the angle of his planes, and the rate of descent was startling."

\* \* \*

A reader at Prestwick sends the following letter:—

"Perhaps the following extracts from letters received from my brother, who is in the London Rifle Brigade in Belgium, might be of interest to you.

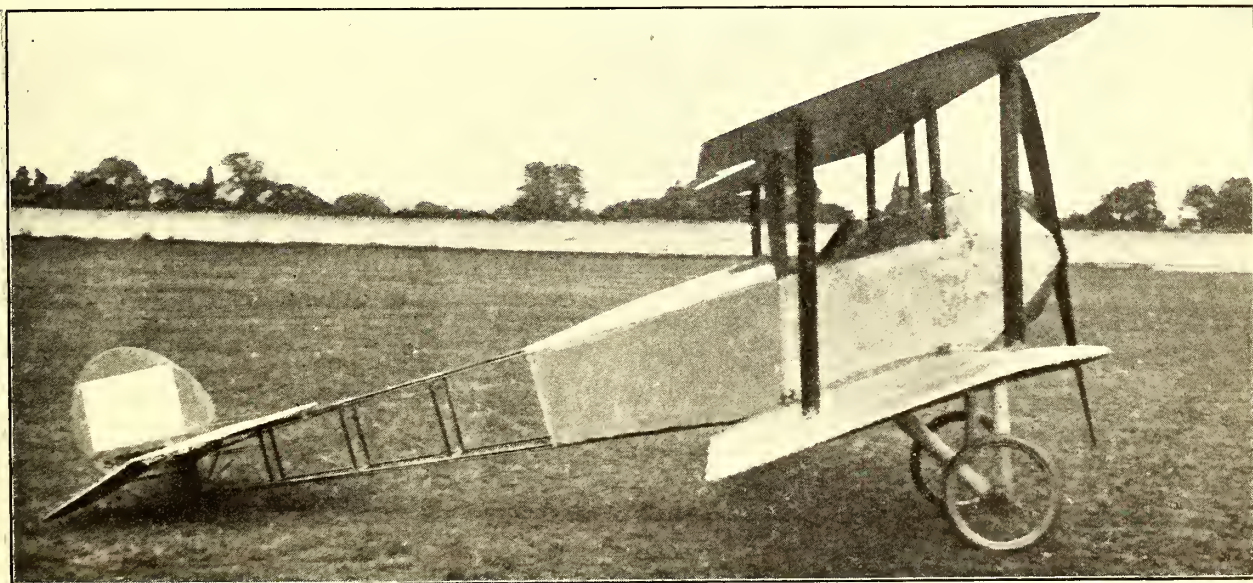
"In spite of the weather (we are having it vile out here, very cold, with rare spells of fine) our aeroplanes are still doing fine work. The men are very brave and fine, taking great risks, and laughing at death every time they ascend."

"In another letter, one just received, he says:—'I don't think there are many Zeppelins left; there are a good many aeroplanes though.'"

[It is distinctly of interest to note that the number of German aeroplanes still to be seen impresses itself on the man on the ground. One hears too much in some quarters about wiping the German air fleet out of the air, and we may take things too easy in consequence.—Ed.]

\* \* \*

A Territorial Officer writes:—The pride, however, of our team is "Mother" (9.2 howitzer). She got a direct hit on a train the other day at eight miles, and they tell me that her aeroplane observer had considerable difficulty in deciding what she actually hit, for there was no visible evidence, or perhaps I should say evidence visible.



A light scout built before the war by the Sopwith Co. for "looping" exhibitions. It is suggested as a useful type for an airship destroyer, for at any rate it can climb and drop bombs.



## FRANCE.

PARIS, January 1st.

This afternoon's communiqué stated:—Our aviators made a night bombardment of the railway stations at Metz and Arnaville.

\* \* \*

On Wednesday, the 30th, a squadron of aeroplanes, variously described as five and seven in number, flew over Dunkirk and dropped bombs into the town. A considerable amount of damage was done and about fifteen people were killed. It is not difficult to guess what the Germans were after in Dunkirk, although apparently their efforts were a failure.

\* \* \*

It was reported from Paris on December 31st that a telegram from Nancy states that a Zeppelin attempted to reach Nancy on the 30th, but was driven off by artillery fire directed from Lunéville, after throwing one bomb.

\* \* \*

The official "Eye-Witness" with the French Grand Headquarters reported on December 29th:—

Notwithstanding the extreme difficulty caused by clouds, rain, fog, and wind, our squadrons of aeroplanes and dirigibles have done excellent work. One of the latter on the night of the 17th dropped 15 bombs on the railway station at Sarrebourg, and on that at Petit Eich five bombs, and 1,000 arrows on a train in the station at Helming. The damage done was considerable and admitted by the German newspapers.

On several occasions on the 18th, 20th, 21st, and 22nd, our aeroplanes chased the German machines and compelled them to land. On the 18th one of our aviators killed by rifle shots a German pilot, whose machine was ultimately smashed on the ground. Another near Arras put to flight a hostile aeroplane by firing 20 carbine shots at it. On the 22nd another of our officers, pursued by an Albatros, succeeded in bringing back to our lines his machine, which was badly damaged by the bursting of shells. Several aeroplanes, notwithstanding the state of the atmosphere, threw bombs and arrows on the trenches on the 18th, on massed troops of the enemy on the 19th and 20th, on railway station and trains on the 20th and 22nd, on a captive balloon on the 25th, on the harbour at Strasburg and the railway station at Dieuze on the 22nd. The Prince (?) of Teck has expressed his sincere thanks to the chief of the aviators who have been operating on the Belgian coast in conjunction with the British naval squadron. These aviators have, indeed, done useful work in regulating the range of guns and watching the enemy's submarines.

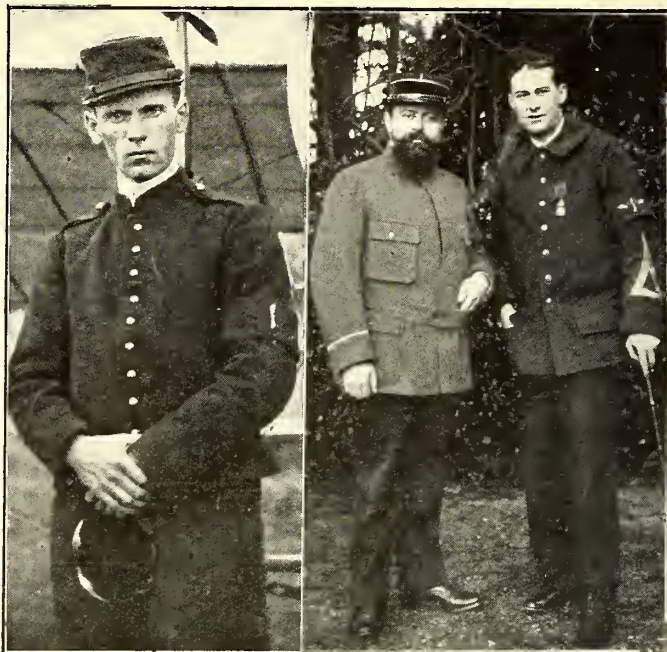
\* \* \*

A French communiqué, replying to the assertion of the German Government that the bombardment of Nancy by a Zeppelin airship was a reprisal for the French aeroplane attack on Freiburg and Breisgau, says: "French aeroplanes have never executed any but strictly warlike operations. The bombs thrown on Freiburg and Saarbuck struck nothing but aviation sheds and a railway station. French aeroplanes flew over Metz yesterday (December 28th) and dropped bombs only on the sheds and on the railway station and barracks of Saint Privat. The German bombs on Nancy, on the other hand, fell far from any military building, at a point where they could only damage civilian property and kill civilian victims."

\* \* \*

The British triple attack on the sea, beneath the sea, and in the air against German ships and the town of Cuxhaven has aroused enthusiasm in France.

The "Temps" says: "This novel attack, well prepared, has succeeded, and one may consider that henceforth new tactical opportunities are offered, with every chance of success, to the sea and air fleets. The aeroplanes came back safely to pre-arranged shelters, and a minimum loss was suffered. The neatness and ingeniousness of this absolutely new operation,



OLD FRIENDS IN NEW GARMENTS.—The Caporal Aviateur Louis Noel, and the Sapeur-Aviateur Verrier, with the Doctor who saved his life.

conducted with engines never tested before the present war, must be greatly admired."

The "Débats" says: "The operation was exceedingly well planned, both in the air and on the water. As to the results, it will suffice if three or four aviators only dropped each half a dozen bombs, in which case the damage done to the ships and the gas factory will have been considerable."

\* \* \*

Mr. Basil Clarke, of the "Mail," reports:—"News reaches here (Northern France) from a good source that the aeroplanes officially reported to have bombarded Metz yesterday were French and British. They did considerable damage with bombs to various military positions. The aeroplanes were six in number—four French and two British. All returned safely to their starting point. The raid was made in the dark.

[It is exceedingly unlikely that any were British.—Ed.]

"German aeroplanes flew towards Dunkirk again yesterday (January 3rd) but retired when they were met with fire from an aerial gun.

"The official report of the raid (on Wednesday) gives the following details:—Number of bombs dropped, 30; number of people killed, 20; wounded, 38. Of this number, only four were soldiers. The remainder were civilians, nearly all of them women and children. No fewer than three bombs of the thirty were thrown on the military hospital."

## GERMANY.

Mr. H. Devitte, the "Express" correspondent at Geneva, reported on Sunday, the 3rd, that after short trials the latest Zeppelin left Friedrichshafen on Friday afternoon. It is believed to be bound for Cuxhaven to replace the airship destroyed in the recent raid. This latest airship took nearly six weeks, instead of three, to complete, as the raid on Friedrichshafen damaged the gasworks, and there was a shortage of hydrogen. Work was started immediately on another. [All this may be merely rumour.—Ed.]

\* \* \*

A "Central News" report from Amsterdam, December 30th, says the "Telegraaf," states that at Goch (a German industrial town a few miles from the Dutch frontier) three large factories, containing food stores, near the railway station, have

been placed under military surveillance because an English aeroplane attack is feared. It is stated that a few days ago two aeroplanes were observed over the town.

\* \* \*

It was reported from Amsterdam on January 2nd that a Berlin telegram stated that two hostile airmen flew over Liesdorf, near Saarlouis, on January 1st. After throwing several bombs they disappeared in the direction of the French frontier.

\* \* \*

The "Express" correspondent at Geneva reports on December 30th that news from Friedrichshafen arrived to-night at Romanshorn (on the opposite shore of Lake Constance, in Swiss territory) that one of the super-Zeppelins, launched barely two months ago, was completely destroyed during the British air raid on Cuxhaven. The airship was in its shed at the time, and was wrecked by bombs. Another Zeppelin escaped by rising in the air just in time and sailing inland. The unexpected attack on Cuxhaven, where Zeppelins are sheltered, has caused a panic at the factory in Friedrichshafen. Urgent orders have been received for the completion of two airships now being built there, and Count Zeppelin arrived yesterday to supervise the work.

[This is possible if improbable. When a Zeppelin and its shed is blown up, there is generally no doubt about it, and definite news of the destruction would have been received from the aviators who took part in the raid.—Ed.]

\* \* \*

Mr. Alan Bott, the "Daily Chronicle" representative at Basle, continues to send "horrid stories" of the "super-Zeppelins" at Friedrichshafen. "Another new Zeppelin has just left Friedrichshafen 'for an unknown destination.' As usual, it had been tested two or three times over the Lake of Constance, some of the torpedo-shaped bombs being dropped on floating targets. Only time can solve the mystery of the giant airships. Their non-activity, combined with German boasts, has won them a place in the public skeleton cupboard. But if the Zeppelin threat is all bluff, as is declared by various American newspapers that know nearly everything, it is a very expensive kind of bluff. Each of the improved vessels costs, roughly, £100,000 for building and equipment. As a new one is turned out every three weeks this means over £33,000 a week. So far none of the improved Zeppelins has been used. Those that have done raiding and reconnoitring work in Poland and France are of the old type, constructed before the war. Most estimates put the number of new super-Zeppelins at 15 to 20.

"This 'unknown destination' is part of the mystery. The workmen do not know where the results of their labours are stored. This much is certain—it would never do for British and French airmen to find out. There is talk of great air bases near Hamburg, Namur, Antwerp, Brussels, and other towns hundreds of miles apart. There is talk of new sheds to the north of Zeebrugge. There is talk of trial evolutions over the Kiel Canal and the Baltic, in conjunction with submarines and warships.

"The report that they are to be used for naval purposes is strengthened by the fact that bomb practice by the completed vessels is carried out over the Lake of Constance and not over the shore."

[Mr. Bott has got surprisingly near the truth,—for a journalist. The Zeppelin has been proved a failure over land, owing to the presence of fast aeroplanes. Its only hope is as a scout at sea, for it is faster than any sea craft, and so can scout and run away. As a weapon it is useless against naval gunnery, but it has some hope of smashing a destroyer which does not happen to carry high-angle guns, hence the bombs. But all its plans are laid without reckoning with our new and fast seaplanes. In the words of Mr. Asquith, "Wait and see."—Ed.]

\* \* \*

According to Reuter, the "Frankfurter Zeitung" learned from Coblenz that a French dirigible on January 1st landed at the colliery "Idylle," near Krupps. French maps, in-

struments, a signal horn, and German and French flags were found near by. The military authorities were at once informed, and despatched two hundred soldiers, who dismantled the balloon and sent it to Coblenz. The dirigible is about eighteen to twenty yards long and from four to five yards in diameter. No passenger basket could be found.

[This is the silliest of the many silly stories Reuter has let loose during the war. A "dirigible" 60 ft. long by 15 ft. diameter would be useless for real military work. Or can it be that the "Beta" has escaped and shrunk in the cold Continental air? Anyhow, airships do not carry passengers in baskets. It is much more likely that it was the Parseval Seigsfeld sausage which was noted by one of our officers as having gone adrift from the North-West fighting line.—Ed.]

#### BELGIUM.

The "Times" correspondent in Northern France reported on January 2nd:—

"A letter from a trustworthy correspondent in Brussels declares that great havoc was wrought on the flying ground at Etterbeek by the bombs dropped by an English airman. The damage referred to in the letter was the work of Commander Davies, who, as the Admiralty reported, dropped 12 bombs.

\* \* \*

A Reuter message from Paris on December 20th says that a Taube flew over Westende at the moment when the presentation of colours to the soldiers of the 1914 class who have just been called up was being made. Three bombs were thrown. The first burst behind the first battalion, but nobody was struck. The second struck the ground behind the third battalion and burst harmlessly, while the third fell ten paces in front of the colonel. Neither officers nor men moved, and the recruits received their baptism of fire with the coolness of veterans.

[A very pretty story and probably an absolute invention.—Ed.]

#### Big Game Shooting.

The following letter appeared in the "Times" on December 31st:—

"Sir,—I read this morning that the aeroplane which appeared over the Thames on Christmas Day was fired upon by our soldiers at various points, and that 'the aviator was fortunate to get away.' The reason is not far to seek. Our men are taught to 'draw a bead.' Aeroplanes are like driven birds. No one who relies on bead-drawing is ever any good at driven game. He hits the point aimed at, true, but the bird is no longer there. If good game shots could be armed with a sufficiently powerful weapon, they would hit an aeroplane every time. Would it be possible to apply their methods to our air defence guns?"

"FRASER H. J. TAYLER.

"41, Bromwich Street, Bolton, Dec. 28th."

#### Southampton District.

The awful weather has again played havoc with flying during the past week. A good flight was made on Saturday from Woolston when a Sunbeam-engined Sopwith tractor 854 was out for test. The flight was of a long duration and the steadiness of the machine and the good working of the Sunbeam were noticeable. On returning up Southampton Water the speed was amazing for a fairly large machine. On Sunday afternoon a small Sopwith-Gnome scout came out from Calshot and made a series of "landings" very neatly done. At the same time No. 854 was out from Woolston, its performance being very good. There have also been flights on Farmans, Avros, and Sopwiths between the showers.

#### An Address.

A mutual friend asks that the address should be made known of Mr. L. Moore Lilley, late of the Sopwith Aviation Co., Ltd., now 2nd Lieutenant, Army Service Corps, as he is anxious to receive letters from his friends at home. They should be addressed: "1st Corps, 61st (M.T.) Company, 2nd Division, Supp. Col., Army Service Corps, on Active Service."



## School and Weather Reports.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
Hendon ...	Windy	Windy	Windy	Fair	Gale	Gale	Rain
East Coast ...	Hurricane	Wet a.m. Fine p.m.	Wet	Fine	Dull	Show'y	Wet
South Coast...	Rain	Show'y	Show'y	Show'y	Stormy	Fine to Fair	Show'y

**Windermere.**—AT THE NORTHERN AIRCRAFT CO.'S SCHOOL.—On Monday Mr. W. Rowland Ding was busy morning and afternoon on one of the firm's water biplanes, and gave a spectacular demonstration of fancy flying. In spite of bad weather, tuition was given on Monday, Tuesday, and Thursday. Mr. Lashmar was out alone and did 135 minutes' flying in all. Mr. Railton received tuition, taking partial control. A number of new pupils have signed on, and four machines will soon be ready for use, namely, a tractor mono, tractor bi, pusher mono, and pusher bi—in fact, a complete aviary.

**Hendon.**—AT THE GRAHAME-WHITE SCHOOL.—Instructors: Messrs. Manton, Winter, and Russell. Pupils with instr.: Prob. Flt. Sub-Lieuts. Bessom, Digby, Reed, and Walmesley. Circs. alone: Prob. Flt. Sub-Lieuts. Driscoll and Mills. Machines: Grahame-White biplanes.

AT THE LONDON AND PROVINCIAL AVIATION CO.'S SCHOOL.—Instructors: Messrs. W. T. Warren and M. G. Smiles. Strts. or rolling alone: Messrs. Abel, Laidler, England, Derwin, and Collett (new pupil), progressing well. L. and P. tractors.

AT THE HALL FLYING SCHOOL.—Instructors: Messrs. J. L. Hall and J. Rose. Pupils: Mr. Lloyd 8 flights, Mr. Connachie 8 strts. Machines: Hall tractors. Mr. Hall testing No. 2.

AT RUFFY SCHOOL.—Instructors: Messrs. Herbert James and Howard James. Pupils: Messrs. Aoyang, Graham, Donald, Marriott, Lacroux, Kenworthy (new pupil). Machines: 60-h.p. Gnome Caudron (dual control) and 45-h.p. Anzani single seater. A new 50-h.p. machine being erected.

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# THE AEROPLANE

*Edited by C. G. GREY. ("Aero-Amateur")*



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WEDNESDAY, JANUARY 13, 1915.

No. 2

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## Five Months of War.

All civilian aviation, as such, having ceased at the end of July, the remaining five months of the year were concerned entirely with naval and military aviation; and as this is the first time in the world's history that aircraft have been concerned in what one may presumably call a First Class War, it seems advisable to review those five months in some detail.

In doing so it has been the writer's endeavour to leave out unessential details and to draw attention only to such matters as bear with some importance on what has happened or what is likely to happen. Some points are mentioned which may seem trivial at the moment. Later on their true value in the scheme of things may appear more clearly.

On looking back, even for so short a period, one cannot help being struck by the alteration in one's outlook in war-time. Flights which would have been astonishing in time of peace pass almost unnoticed, and comparatively short flights bring important results. Most astonishing of all, perhaps, is the fact that, despite the enormously increased amount of flying done, much of it done under very bad weather conditions, and with the risk of being shot down added to ordinary flying risks, the actual number of casualties seems very little, if any, higher than in time of peace.

An officer who recently came home wounded encouraged one of his brothers who was just going out by telling him the other day that he had worked it out that an officer regularly at work in the fighting-line could reckon, with luck, on a maximum of fourteen days in the trenches before he was wounded, and if he were not wounded by then, on twenty-one days before he was killed. He is something of a mathematician, so one mistrusts his figures, but it appears that an aviator can reckon with certainty on far less liability to injury or death than anyone in any other branch of the Service, except those on lines of communication. And this despite the fact that aircraft are now proved as essential to an army as foot or guns, and more so than horse.

That is only so for the present. If the Germans manage to produce a really effective fighting aeroplane, possessing speed as well as lifting power, while we are fiddling about with official designs which are deadly slow and cannot climb, or are trying to make fighting aeroplanes by fitting shore-going landing gear to seaplanes instead of building twin-engined, fuselage-bodied "pushers," the casualty list may take on another aspect.

We try that "long-suffering star" of ours rather too high, and some day it will let us down. Let us pray it may not do so just for the present. Meantime, a glance backward over the past five months may suggest points for serious consideration to those who have eyes to see and brains to understand:—

### First Month.

War was supposed to start officially on August 4th—at least, that was the official date of mobilisation, but actually the Fleet, and with it the Royal Naval Air Service, had been at nominal war strength ever since the "Test Mobilisation" in July. How much the R.N.A.S. has increased in strength since then one naturally will not say, but the old establishment was a very small thing compared with its present state. The Royal

Flying Corps likewise was then only a fraction of its present size. In both cases the losses have been negligible compared with the additions.

Before the end of the month practically all civilian aviators who could fly decently—and many who could not—had been absorbed into the Services, except a few of the very best pilots, who were retained by manufacturers to test new machines.

Brooklands aerodrome was taken over entirely by the R.F.C., and a military school, which at first was amazingly badly managed, was set up on the ruins of the civilian schools. More recently there has been remarkable improvement under intelligent control.

Hendon Aerodrome was made a Naval Air Station, the civilian schools continuing work more or less under naval supervision, and a purely naval school for the higher education of pilots was also established. The results have been brilliantly successful, the system evolved by the Officer Commanding producing many good fliers, who have also the makings of officers worthy of the King's uniform. The civilian schools were supported by sending officers appointed on probation to them for preliminary training, and one hopes to see more encouragement of this kind given in future.

On August 11th the King and Queen went to Aldershot to bid farewell to the troops, and visited R.F.C. headquarters.

On the 14th three squadrons of the R.F.C. flew to France, with Amiens as their objective, this city being their base till the "wash-out" took place. Brig.-General Sir David Henderson, K.C.B., D.S.O., hitherto Director-General of Military Aeronautics at the War Office, was gazetted Colonel-Commander, and commanded the corps until November, Lieut.-Col. Brancker, R.A., taking his place at the War Office. Lieut.-Col. Trenchard, C.B., D.S.O., previously Assistant-Commandant, Central Flying School, took command of headquarters at Farnborough, Lieut.-Col. Sykes being appointed a General Staff Officer with Headquarters in the Field. The small R.F.C. force was excellently organised and very fairly equipped.

Early in the month the R.N.A.S. took over various seaplanes built for the "Daily Mail" Seaplane Circuit of Britain, which was "declared off" as soon as war broke out. Some have proved very useful. The combined views of various men of experience resulted in this paper advising the naval and military authorities to give up all experiments and buy quantities of high-speed scouts and gun-carriers of proved value. Apparently the advice took some months to soak in.

A regular patrol of airships and seaplanes across the Channel was kept up by the R.N.A.S. all the time the Expeditionary Force was crossing, and coastal patrols were organised all along the coast and far into the North Sea from Scapa Flow. On the 27th a detachment of land-going machines flew to Ostend and a base was established there to watch German movements in Belgium.

At the outbreak of war it was computed, as the result of comparing various sources of information, that France had about 800 aeroplanes—many very ineffective—and about three useful airships. Russia, about 300 aeroplanes, and Great Britain about 100 capable of service. Against this, Germany had about 1,300 aeroplanes and the following airships: L Z.9 (Z II), built in 1911; L Z.11 ("Viktoria Luise"), 1911; L Z.12 (Z III), 1912; L Z.13 ("Hansa"), 1912; L Z.16 (Z IV), 1913; L Z.17 ("Sachsen"), 1913; L Z.20 (Z V), 1913; L Z.21 (Z VI), 1913; L Z.22 (Z VII), 1914; L Z.23 (Z VIII), 1914; L Z.24 (L III), naval, 1914; L Z.25 (Z IX), 1914. There were also perhaps four or five Parsevals and Grosses (M type), and



a Schütte-Lanz or two. Austria was estimated to have 100 aeroplanes and two or three small airships. There has been no subsequent reason to modify these estimates.

Italy was estimated to have about 130 land aeroplanes, 25 seaplanes, and 7 airships fit for service. The number is now increased all round, and will be a valuable addition to the Allies' air-fleet in due course.

On August 3rd an armed and armoured Dorand biplane flew over Paris, but the custom of patrolling Paris did not continue. France was estimated to have 300 civilian pilots and 350 military pilots mobilised by the middle of the month. Two British and three Norwegian pilots joined the French flying corps.

Thanks to the French flying corps, this paper was able to warn our pilots very early that an aeroplane is within rifle and machine-gun range at 8,000 feet altitude, and that machines had been riddled with bullets at 6,500 feet.

Early in the war bombs came into common use. Bombs were dropped on Metz on August 16th by French aviators, and by Germans on Namur on the 14th.

On the 14th a German airship was reported over the Terschelling Bank in the North Sea. On the 22nd L Z.23 (Z VIII) was brought down by a French 75-mm. gun at Badonvillers and burnt by peasants next day.

On the 20th M. Doumer, an ex-Minister of France, returning from Belgium, reported three Zeppelins destroyed by artillery and one wrecked in a forest.

On the 20th a French report stated that an observer who was not a pilot on a dual-control aeroplane brought the machine home and landed safely though the pilot had been hit and was unconscious. A powerful argument in favour of dual control.

On the 21st it was stated that a French airship had done good work at night with bombs on a German bivouac. It was not stated how many French airships had been shot down by French troops before this.

On the 24th a "constant procession" of German aeroplanes was reported round Brussels, and the same night a Zeppelin (authentic) dropped bombs on Antwerp. On the 26th this paper stated that general reports indicated a regular patrol of the Elbe estuary by Zeppelins and seaplanes.

On the 28th a Schütte-Lanz was reported over Lublin, and on the 29th a Russian report stated that a Zeppelin had been shot down at Mława—it seems more likely to have been a Schütte-Lanz.

On the 29th an aviator of the Allies delivered messages of good cheer to captured Brussels, and proceeded to loop the loop as a mark of contempt for German marksmanship.

On the 30th, Lieut. von Hiddessen, the winner of the 1913 Prince Henry Circuit, dropped the first bombs, and his visiting card, on Paris. This later became a daily habit with German pilots.

Mr. Whittaker, returning from Germany after war was declared, contributed a series of valuable articles on German aviation which shed much new light on the German aeroplane fleet and the work to be done in defeating it. He smuggled out of Germany at the same time numerous photographs of the latest German machines, many of which have since been useful to our officers and men on active service in enabling them to identify hostile machines. This office has also had the honour of supplying photographs of British and foreign aeroplanes to officers of both Services, with which to educate others, and has supplied lantern-slides for lectures to newly joined officers and men. Mr. W. H. Sayers and Mr. A. C. Burgoine, who have since both joined the R.N.A.S., contributed articles on the acceleration of aircraft production, which have undoubtedly served their purpose, and would have done so to a still greater extent but for the mental inertia which afflicts most officials and manufacturers in all trades in this country.

#### Second Month.

On September 2nd, as the result of other people's opinions, it was suggested in this paper that seaplanes carried on fast ships would be used in finding German commerce-destroyers on the high seas. As yet nothing has been made known of such action.

Attention was drawn to the splendid co-operation between German aircraft and artillery, and to the lack of previous training of the R.F.C. in this respect. It speaks highly for

the personnel of the R.F.C. that they have done so well lately in this work.

Two Curtiss boats, then at Durban, were offered by their owner, Mr. Hudson, to the Navy. Mr. Cutler, the pilot, was appointed to the R.N.A.S.

On September 4th, one of our submarines captured a German seaplane with pilot and passenger adrift in the North Sea, and brought them into Harwich.

Early in the month the defence of London against aircraft was taken over by the Air Department at the Admiralty, and "H.M.S. Flatroof" and her satellites were commissioned, thereby adding to the joy of many, and the importance of some people.

On September 19th an order was issued diminishing the lighting of London streets. Naval airships made many journeys over London to observe the effect, and after much experimenting pronounced it impossible to recognise any particular locality on a dark night. Great saving has obviously been effected in the ratepayers' bills for street lighting, and in shopkeepers' individual light bills. Thick-headed pedestrians have been taught to take proper care in crossing roads, or have been deservedly run over as a lesson to others. Cyclists, long a nuisance on the road, have been compelled to carry red lights aft. Motoring road-hogs have become reasonably careful. Sufficient dim corners are now discoverable to encourage mere "walking out" to develop into serious "courting," with probable good results to the marriage rate, and ultimately to the birth rate. Altogether a great deal of real good has been done by the order.

It was noted by the official "Eye-witness" on the 22nd that the R.F.C. had up till then never seen a Zeppelin, and only twice non-rigids. On the 29th, "Eye-witness" drew attention to a German observer in a captured machine coming down safely with unconscious pilot owing to dual control.—Dual control had recently been strongly condemned in the "Times" Engineering Supplement by a writer signing himself "Ornis," who systematically reflects the views of the Royal Aircraft Factory.

The Armstrong-Whitworth Co. produced an extraordinarily efficient "tabloid" biplane which showed a speed range of 40 to 75 m.p.h. with a 50-h.p. Gnome. It was condemned by R.F.C. officers of limited experience, and afterwards highly approved by very experienced R.N.A.S. pilots—a curious dissimilarity of judgment.

On September 23rd attention was drawn to the lack of attention given in this country to evolving "fighting" aeroplanes, the Vickers gun-carriers and standard Farmans being the only examples of land-going machines for this purpose, except the R.A.F.'s F.E.2, which had killed Mr. Haines. Thanks to the Admiralty, Short and Sopwith gun-carrying seaplanes had been tried, and knowledge was gained.

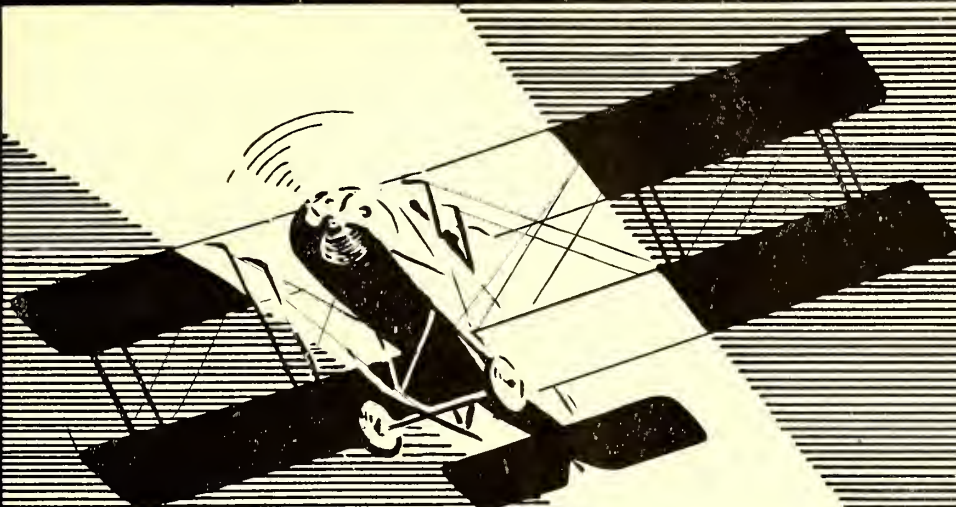
It was also pointed out clearly that orders for B.E.2cs. would cause unnecessary delay in delivery. If permission had then been given to practical men to turn the R.A.F.'s fads into real flying machines, the Services would by now have had about 150 machines more than they possess at present. Happily makers who stuck to their own designs have saved the Services from the results of official foolishness.

About the 26th, Sergt. W. W. Reilly, R.F.C., was promoted to commissioned rank, the first of the rank and file of the R.F.C. to be so promoted.

On the 23rd, Flight Lieut. (now Flight Commander) Collet, R.N.A.S. (now Captain, R.M.L.I.), on a Sopwith, dropped bombs at Düsseldorf and damaged the airship shed. On the 30th good work by R.N.A.S. pilots operating with Belgian troops at Antwerp was noted.

On the 30th it was stated that the Avro biplanes of the R.F.C. were standing hard work and exposure at least as well as anything else in the field. They were known to be 10 to 15 m.p.h. faster than the B.E.2s, and over 20 m.p.h. faster than B.E.8s, the latter being also dangerous to fly.

On September 1st the second Boche flew over Paris, but the third visitor was nearly caught by French aeroplanes, headed by a South African officer of the R.F.C. Thereafter 24 crack



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French civilian aviators were told off to patrol Paris, but they never caught anything. About the same date it was reported that the personnel of a German battery was destroyed by a French bomb-dropper.

A credible report from Russia stated that a Zeppelin and its crew were brought down near Sjerade. A Danish report from German sources stated Zeppelin losses in August to be six machines—one outside Liège, one burnt at Metz by Capt. Finck, one shot down at Badonvillers, one lost near Antwerp, one near Brussels, one smashed in a storm in Luxemburg. Of these two are known for certain, and probably two others are correct. Amsterdam then reported 40 Zeppelins in existence.

On the 5th, Germans dropped bombs on Ghent; on the 8th on Nancy; on the 25th on Calais.

On the 7th, Japanese seaplanes were reported over Tsing-Tao in Kiao-Chau. No definite report has yet been received as to what part aircraft really played in this affair.

On the 8th a story was published of the capture of six German aeroplanes by French Dragoons, also of a good piece of work by a French pilot in flying low to draw the fire of a German battery.

On the 23rd a bomb fell in Maastricht, in Holland—probably from an aeroplane, possibly of British origin. On the same day seven German seaplanes were reported off Helgoland.

On the 18th, the "Matin" published the complaint of the French soldiers, "What are our avions doing?" Later on, thanks chiefly to civilian pilots, and a few first class chefs-d'escadrille, they did very well, but much reorganisation was necessary, under General Hirschauer.

Germany's output of aircraft was reported as one airship and 70 aeroplanes per week—if one includes Parseval-Siegsfelds, and all non-rigids, the figure is probably accurate.

On the 26th it was reported that the Russians had brought down a second Zeppelin. Up to the end of September German losses officially reported included 17 aviators killed, 11 wounded, and 3 missing.

The précis of the report of the physical effect of steel arrows from aeroplanes was published in this paper on the 30th, translated from the "Munich Medical Weekly." The leading London surgical newspaper, with true British enterprise, published most of the same article late in December.

It was reported that two German aeroplanes were in German S.W. Africa. These have recently come into use with good effect.

### **The Third Month.**

On October 7th, quotations from the French press mentioned the use of wireless by the R.F.C. for the first time. This has since been mentioned in various letters from the war area. The R.F.C.'s good work was neatly summed up in a letter published on this date from an A.S.C. clerk, who said, "I consider that our aeroplanes have been the means of saving thousands of lives during the war."

On October 3rd, the official "Eye-witness" stated that the R.F.C. up to September 21st had covered 87,000 miles, or 2,000 miles per day, or 1,400 hours in the air. As was pointed out, this left any astute German to deduce that if we had 100 pilots they only flew 60 miles each once in 3 days. Which meant either we had much less than 100 pilots, or they did very little flying. One officer had already stated in a letter published in a daily paper that he had flown 43 hours. Inference obvious.

On October 8th, Squad. Comm. Grey and Flt. Lieut. (now Flt. Comm.) Marix, both on Sopwiths, flew from Antwerp to Cologne and Düsseldorf respectively, the latter burning a new Zeppelin and destroying its shed. Antwerp was then being evacuated.

On the 14th, a report by the "Times" correspondent in France was quoted, mentioning our fast "scouts" for the first time. The report also emphasised the need for dual control—in contradiction of "Ornis" aforementioned. On the same date a letter quoted from the "Mail" allowed one to deduce the failure of the B.E.8's.

On the 21st, a French correspondent enabled this paper to point out that the vertical range of the German high-angle guns is 7,000 metres (about 22,000 feet), and a pilot recom-

mended fast machines (85 to 100 m.p.h.) as fairly safe even when forced by clouds to fly low, remarking that clouds might even be an advantage.

On the 15th an official notice was issued stating that the Naval and Military Aero-Engine Competition had been won by the Green engine. Fine performances were also put up by the Gnome, Salmson, and Anzani. The R.A.F.'s own engine had failed ignominiously early in the trials to stand up to a similar test.

Twenty-eight officers and nine N.C.Os. were mentioned in Field-Marshal Sir John French's despatches dated October 8th.

The "Eye-witness" notes, issued on the 17th, mentioned the inability of our machines to catch a German aeroplane, and on the 28th this paper issued a further warning of the need for fast machines for the R.F.C., drawing attention to the advent of improved types of German aeroplanes, to the delays caused by attempts at super-standardising, and to the desirability of effectiveness, as in the French Voisins, rather than mere theoretical efficiency.

On the 22nd, an Admiralty Memorandum announced the appointment of Wing-Commander Samson, Squad. Comm. Grey, and Flt. Comms. Collet and Marix to the D.S.O.

A letter from an R.E. officer, published on the 28th, noted that General Joffre used British officers as observers by preference, on account of their reliability.

On the 31st, H.M.S. "Hermes," used as seaplane carrier, was torpedoed and sunk in the Straits of Dover, unhappily with loss of life, but otherwise to the gratification of the R.N.A.S.

On the 7th it was reported from Russia that L Z.20 (Z V) had been brought down and captured. About the same time the debut of L Z 26 at Friedrichshafen was reported. It is not known whether she has become Z X or L IV—military or naval. It was falsely reported that Zeppelin bombs had fired the oil-tanks at Antwerp. These were really fired by the Belgians themselves to keep the Germans from getting the oil.

Another new Zeppelin, probably L Z. 27, or possibly merely an earlier one rebuilt, was reported from Potsdam about this date. About the 14th, a Russian report stated that yet another Zeppelin had been destroyed in that country. On the 21st, the debut of L Z. 31 was reported at Friedrichshafen, indicating rather that L Zs. 27, 28, 29, and 30 were ordered from the Potsdam works, where the newness of the organisation prevented such rapid work as at Friedrichshafen. New Zeppelin sheds were reported at Mägeltonden in Schleswig and Rostock in Mecklenburg, indicating still more clearly the intention to use Zeppelins for naval scouting at the ends of the Kiel Canal.

Bomb dropping was reported on the 12th at St. Omer, on the 13th at Nancy, on the 15th at Dunkirk, on the 28th at Montdidier, and on the 30th at Hazebrück, showing how clearly the Germans knew our import centres. The Allies reported on the 13th at Baden and Karlsruhe, and on the 14th at Bruges. Austrians threw bombs on Antivari on the 12th, and Germans bombed Warsaw about the 25th for several days.

On the 28th it was stated that the new Voisin (130 h.p. Salmson), with pilot, passenger, machine-gun, ammunition, bombs, and fuel, climbed 2,000 metres (6,500 feet) in 10 minutes. The figure is worthy of attention.

### **Fourth Month.**

It was announced early in November that the Cross of the Legion of Honour had been awarded to 9 officers of the R.F.C. and the Médaille Militaire to 14 N.C.Os. and men, as recognition to the whole Corps of the services it had rendered to France. The recipients of the honours were selected by the senior officers of the R.F.C., not directly by favour, or for any particular achievement, but by lot among those most deserving distinction.

On November 3rd an organised attempt was made to drop bombs on the Kaiser, then at Thiel. It is alleged that he was missed by only a few minutes.

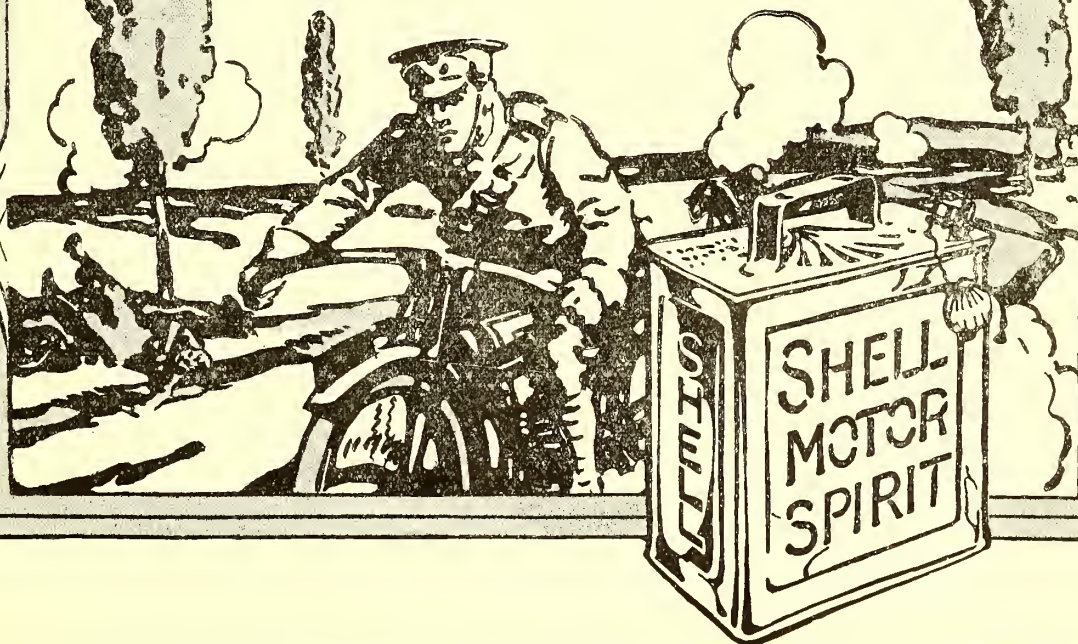
On the 18th this paper, influenced by practical people, recommended that designs of British constructors which had proved successful on service should be commandeered by the Services, and farmed out, on a royalty basis, to less successful con-

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structors—such as the R.A.F.—and that B.E.2cs. should be scrapped. Those who know the latest results of the B.E.2c. craze will agree that the advice given two months, and more, ago was not far astray.

The "Eye-witness's" report of the 20th mentioned the fine work of the R.F.C. in snow and sleet. A letter dated November 6th, and published about the same date, from a R.G.A. officer of a heavy battery gave the first intimation of the detachment of individual R.F.C. pilots for artillery fire-control.

On the 21st, Squad. Comm. Briggs, Flt. Comm. Babington, and Flt. Lieut. Sippe, all on Avros, flew from Belfort to Friedrichshafen and dropped bombs. According to report they did considerable damage to plant and to L Z. 32, then nearing completion. Comm. Briggs was wounded and captured. The other two returned safely. All three were immediately awarded the Cross of the Legion of Honour, and have since been appointed to the D.S.O.

Sir John French's despatch of the 29th stated: "Every day new methods for employing them (the R.F.C. pilots) are discovered and put into practice. . . No effort should be spared to increase their numbers and perfect their equipment and efficiency." One seems to have read sentiments similar to those in the latter phrase of the quotation in one or two (not many more) papers for the past three years. Friends who inspired *THE AEROPLANE* in those days may feel inclined to say "We told you so."

A Garrison Gunner, writing on the 20th, mentions the interesting combination of "Mother," who is a 300-pounder howitzer, a 13-pounder "Archibald," and a battery of 5-inch heavy guns, all with an aeroplane observer to control fire. Many more such units seem desirable against such time as we approach the Rhine.

On the 28th, a quotation from the "Times" makes the first mention of the highly effective bullet-proof seats supplied by Firths of Sheffield.

In the course of the month several squadron commanders of the R.F.C. were appointed Wing-Commanders, with temporary rank of lieutenant-colonel, these officers being Majors Brooke-Popham, Webb-Bowen, Higgins and Burke. Major Fulton, C.B., chief of the A.I.D., was promoted at a later date, and as the senior major remains the senior officer in temporary rank. Lieut.-Colonel Trenchard had been promoted some time before, and Brigadier-General Sir David Henderson, K.C.B., D.S.O., had been promoted to Major-General on October 6th.

On November 4th, a new Zeppelin shed was reported near Emden harbour, and it was suggested as a handy mark for a seaplane raid.

About this date a long French communiqué was issued intended to restore confidence in L'Aéronautique Militaire.

On the 7th, a noticeable increase in the use of captive balloons by both sides was recorded.

An article by M. Georges Prade in a French paper was reported on the 7th, stating that L Zs. 26, 27, 28, and 29 had

been sent out between August 10th and October 15th, and that L Z. 30 was due on November 5th. He appeared to assume that all these were Friedrichshafen ships and made no allowance for Potsdam orders being in the same series and slower in output.

There was another orgy of bomb-dropping. On the 3rd, the Allies blew up the railway at Bruges, on the 4th they again dropped bombs there. On the 5th, the "Eye-witness" reported Forts Englos and Carnot at Lille blown up by British bombs. On the 18th, Germans dropped bombs at Amiens, and on the 21st at Bailleul. On the 28th our men blew up the petrol depôts at Ghent and Bruges, and also bombed Zeebrugge. And on the 20th a prisoner reported that the German officers feared the French and English newspapers dropped by our aeroplanes more than the bombs—meaning of course their truthfulness and not their heaviness.

On the 18th, land-going aeroplanes and seaplanes, shore guns, naval guns, battleships, monitors, destroyers, submarines, infantry and artillery all "assisted" at the bombardment of Zeebrugge. The sight is said to have been rather fine.

On the 20th, daily papers reported the Allies' aeroplanes beaten off in an attack on German bomb-droppers. Showing need for gun-carriers.

On the 17th, a Zeppelin, "very much on end," was reported as drifting across Holland, with the crew "hanging to the cordage." It was probably a Siegfried broken loose.

On the 29th, the first aerial attack on the South African forces was reported from Luderitzbucht.

#### Fifth Month.

On December 7th there was published an official account of the King's visit to the war area, when he visited the R.F.C. Camp, and was guarded continually by R.F.C. scouts overhead.

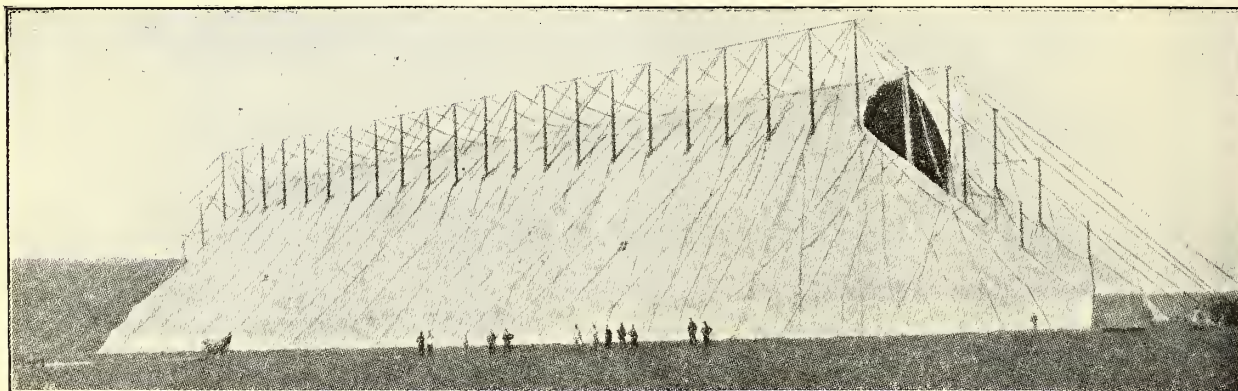
On the 9th, a revised list of those mentioned in despatches was published, including 30 officers and 10 N.C.O.s of the R.F.C.

In the issue of December 2nd, this paper, acting on information received, drew attention to the folly of using pom-poms against aircraft, and recommended the use of air-mines in foggy weather as defence against airships. On the 9th, the possibilities of further supplies of aircraft and engines from America was noted, and a suggestion was made that machines might be delivered to Russia by flying from France and dropping bombs on Berlin.

On the 16th, an R.G.A. officer in a letter mentioned that R.F.C. pilots had brought down several captive observation balloons. An R.F.C. mechanic mentioned that letters—presumably sent on from Headquarters to outlying detachments—were frequently delivered by aeroplane.

On the 24th, a German seaplane dropped a bomb in a garden at Dover, and Squad.-Comm. Davis destroyed a Parseval at Brussels.

On the 25th, a German seaplane flew up the Thames to Dartford, and escaped various pursuers on the way back. On



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the same day, seven naval aviators raided Cuxhaven, Wilhelms-haven, and ships and seaplane sheds in the vicinity, all getting home eventually after doing considerable damage, but losing four seaplanes in the process.

On December 2nd, the French decision to standardise on four or five aeroplanes of proved value was made known, these being Voisins, Caudrons, Farman, and "parasol" Moranes.

Geneva reports of the same date appeared to indicate the reduction in size of Zeppelins to 300 feet, with 800 h.p. and 2 tons of useful lifting capacity. An Englishwoman returned from Germany reported that 4 Zeppelins were known to have been destroyed in Russia, which would make about 10 lost in all, or rather more than the output since war began. Various papers noted that Zeppelin bomb-dropping was being practised against dummy ships, indicating intended use at sea.

French aviators dropped bombs on the big air station at

Freiburg on December 4th, 9th, and 14th, and on Saarbourg on the 7th and 18th, and on Strassburg on the 22nd. On the 5th, one of the Allies' aviators destroyed the bridge of boats at Antwerp. On the 17th, a bomb on Westcapelle Station was reported to have killed 40 German soldiers and wounded 100.

The Germans threw more bombs on Hazebrouck on the 6th, and on the 20th a seaplane dropped bombs on Calais. On the 26th, a Zeppelin dropped bombs on Nancy and got away.

On the 16th, two German machines flew over Dunkirk, one dropping a message to ask about a German General's son, supposed killed, and the other dropping a message from a wounded and captured French aviator.

On the 9th, a report from Sevastopol alleged that the cruiser "Breslau" had been put to flight by Russian seaplanes. Hardly a credible story. On the 25th, French seaplanes were reported over the Austrian port of Pola.

### The R.N.A.S. Comforts Fund.

During the past week no less than 1,000 garments have been dispatched to the men at the various R.N.A. Stations. Colonel Maitland, in command of the Airship Section in France, writing to acknowledge 390 garments sent to his men by Mrs. Sueter, says:—"The packing-case with Christmas comforts arrived yesterday quite safely, and gave the utmost joy and satisfaction to the Petty Officers and men of this Station. They arrived at a most opportune moment, as their stock of clothing was running low, and they, one and all, wish to express to you how very much they value the presents themselves, and also the kind thoughts which prompted both you and the other donors to send them."

Up to date 52 cases and sacks of comforts, containing in all 7,000 garments, to say nothing of 20 gramophones, have been distributed to the different Air Stations and seaplane carrying ships. To secure such a result, the money received must have been laid out with the greatest skill and care, and, undoubtedly, friends of the Royal Naval Air Service will be encouraged to renew their contributions to ensure the continuance of this good work, for, be it remembered, the life of clothing on active service is very short indeed.

The following contributions in cash are acknowledged this week:—Messrs. Accles and Pollock, £10 10s.; the Earl of Camperdown, £10; Messrs. White and Thompson (staff), £7 8s. 6d.; the Aircraft Manufacturing Co., Ltd. (staff), £4 1s.; Messrs. Mann and Grimmer (employees 10th contribution), £1 10s.; Mrs. Marshall (per Dr. Sunderland), £1 1s.; Vickers, Ltd., Erith (Woodworkers' 4th contribution), 10s.; total for week, £35 0s. 6d.; grand total to date, £630 9s. 9d.

Further contributions should be sent at once in time for the really cold weather, to Mrs. Sueter, The Howe, Watlington, Oxon.

### The Royal Flying Corps Aid Fund.

A large number of letters expressing the sincere gratitude of the men of the R.F.C. have been received by Lady Henderson and the Committee of the R.F.C. Aid Fund, and those who have subscribed to the Fund will doubtless be interested to have some particulars as to what the Committee has done.

Each individual man received at the beginning of the cold weather a parcel containing:—

No. 1 Parcel List.—1 Sweater or shirt, 1 muffler, 1 handkerchief, 1 pair socks, 1 pair gloves or wristlets, 1 helmet, 1 towel, 1 body belt, 1 packet of cigarettes (20), 1 pair boot laces, 2 pieces of writing paper and envelopes, 1 pencil, 1 pipe, ¼-lb. tobacco, ¼-lb. chocolate, sweets, novio, soap.

Since then a fortnightly parcel has been sent containing:—

No. 2 Parcel List: 1 handkerchief, ¼-lb. chocolate, Oxo, peppermints, soap, 1 packet cigarettes, 1 packet cigarette papers, matches, writing paper, novio, 1 pair of socks.

In addition to these comforts the men's Christmas dinners were supplemented by 500 plum puddings.

On behalf of the men of the Royal Flying Corps and of herself and her Committee, Lady Henderson takes this opportunity of thanking all those who have so generously responded

to her appeal. It is her earnest desire to continue this work throughout the war, and she feels confident that she can always rely on the support of the public and their sympathy with her efforts.

A list of all those who have contributed to the fund either in money or in kind will shortly be published, but owing to lack of space it will be impossible to give more than the names of those who have sent gifts of clothing and other comforts. Should there be any of the public who wish to make further contributions in kind it is suggested that their selection should be made from among the articles in Parcel Lists 1 and 2.

Lady Henderson will be glad to give details as to size and colour, etc. for the guidance of those who are desirous of making any of these articles.

It may interest those who are concerned with aviation to know that among the many subscribers to the Fund are:—

Employees Aircraft Manufacturing Co., Ltd.	£21 14 7
Ditto (Second contribution) .....	14 15 2
5 American Aviators .....	3 18 1
Grahame-White Aviation Co., Ltd. ....	25 0 0
Employees Vickers Aviation Dept., Erith .....	4 13 9
Vickers Ltd. ....	52 10 0
Employees Sopwith Aviation Co. ....	16 19 3
Employees Royal Aircraft Factory: 100 helmets, 100 socks, 50 mufflers, in cash	1 9 0

Further contributions should be sent to Lady Henderson, 8, Chesterfield Gardens, S.W.

### The Promised Invasion.

The following eminently sensible views appear in a leading article in the "Daily Express" of January 6th:—

It is interesting, but not surprising, to hear, as the "Daily Express" New York correspondent states, that Mr. Paul T. Kenny, who has been lately in charge of the passport department at the American Embassy in Berlin, declares that the failure of the Zeppelins has been Germany's greatest disappointment in the war. "Greatest" may be a large word where so many disappointments are manifest, but we may well believe that the Zeppelin failure has hit Germans very hard. This was pre-eminently the new weapon by which Great Britain was to be terrorised, if not actually subdued. And, so far, the Zeppelins have done just nothing at all. Whether they may or will yet do something is another question. Mr. Kenny disbelieves in the Zeppelins altogether, and declares that Germans themselves have abandoned belief in them. For our own part, being more nearly concerned, we shall do well to steer a sane course between faith and scepticism.

In this, as in so much else, the German plans have miscarried and the plot has been bungled. A Zeppelin raid five or four months ago might have "come off," and, in so doing, might have upset gravely excitable nerves. Now its chance of success is much more remote, and it would upset no nerves at all. Mr. Kenny may well be right in discrediting the Zeppelin menace altogether. If he be wrong, that does not greatly matter, after all.

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## In Memoriam.

It seems right and proper at the opening of the new year to place on record the names of those who have been killed in aeroplane accidents during the past year. As in years gone by, valuable lives have been lost through the criminal carelessness and ignorance of others. For the first time the list contains the names of officers and men killed while flying on active service abroad. May all their names be remembered for their services to the country.

DATE.	NAME.	PLACE OF DEATH.	MACHINE.	CAUSE.
Jan. 26 ..	G. Lee Temple ..	Hendon .. ..	Bleriot monoplane ..	Died in the air, or fainted.
Jan. 27 ..	Lancelot Gipps ..	Larkhill .. ..	Bristol monoplane ..	(Passenger.) Side slip on dual control. School machine.
Feb. 23 ..	E. T. Haynes .. ..	Wittering .. ..	B.E. 2 (R.A.F. propeller biplane) .. ..	(Passenger.) Machine unfit for use.
March 10 ..	Capt. C. P. Downer ..	Upavon .. ..	B.E. 2 (R.A.F. design biplane) .. ..	Elevator bent and wings collapsed in air.
March 11 ..	Capt. C. R. W. Allen & Lt. J. E. G. Burroughs	Netheravon ..	B.E. 4 (R.A.F. tractor biplane) .. ..	Rudder-post broke in the air. [minable.
March 19 ..	Lt. H. F. Treeby ..	Upavon .. ..	M. Farman biplane ..	Stalled and fell into trees. Cause indeter-
April 8 ..	Sergt. Eric Deane ..	Brooklands ..	Bristol boxkite .. ..	Fell out of seat to ground from 300 ft.
April 26 ..	Philippe Marty ..	Hendon .. ..	Morane monoplane ..	Stalled and dived in landing.
May 12 ..	Capt. E. V. Anderson & Air Mechanic Carter	Farnborough ..	Two Sopwith biplanes..	Collision in air. (Carter was passenger with another officer.)
May 15 ..	Lt. J. Empson & Air Mechanic Cudmore..	Northallerton ..	B.E. 2 (R. A. F. design biplane)	Dived into ground in fog.
May 23 ..	Gustav Hamel.. ..	English Channel ..	Morane .. ..	Lost in the Channel.
June 4 ..	Com. A. Rice, R.N., & Lt. T. S. Creswell, R.M.L.I.	Solent .. ..	Wight Seaplane ..	Wings folded back in air.
July 20 ..	Lt. L. C. Horder ..	Fort Grange ..	H. Farman .. ..	Spiralled into ground. Cause indetermin-able. Passenger very slightly injured.
August 12 ..	Lt. R. Skene & Air Mechanic Barbour ..	Netheravon ..	Bleriot .. ..	Side slip and dive through overloading.
August 16 ..	Lt. E. W. C. Perry & Air Mechanic Parfitt	Amiens .. ..	B. E. 8 (R. A. F. design biplane)	Uncontrollable dive on a bad machine.
August 18 ..	Corp. F. J. P. Geard, R.F.C.	France .. ..	B. E. 8 (R.A.F. design biplane)	(Passenger.) Uncontrollable dive as above.
August 22 ..	Lts. V. Waterfall, & C. G. G. Bayly, R.F.C.	Enghien .. ..	Avro .. ..	Apparently shot down by Germans.
Sept. 14 ..	Flight-Lt. Richard T. Gates .. ..	Hendon .. ..	H. Farman .. ..	Misjudged landing in dark.
Sept. 29 ..	Flight-Lts. Vernon & Ash, R.N.	North Sea .. ..	Short Seaplane.. ..	Lost at sea.
Oct. 26 ..	Capt. Crean & Lt. C.G. Hosking .. ..	In Flanders ..	B.E. 2c (R.A.F. design)	Shot down by accident.
Nov. 1 ..	W. A. Alston .. ..	Southampton Water	Sopwith Seaplane ..	(Passenger.) Drowned when experimental machine dived into water.
Nov. 5 ..	Prob. Flight Sub.-Lt. P. B. Murray ..	Upavon .. ..	B.E. 2. .. ..	Dived into ground in fog.
Nov. 5 ..	Flight Lt. Beevor & Lord Annesley ..	Dixmude .. ..	Sopwith propeller bi. ..	Shot down by Germans.
Nov. 5 ..	E. T. Busk .. ..	Farnborough ..	B.E. 2 (R.A.F. build) ..	Petrol caught fire from R.A.F. engine.
Nov. 24 ..	Lt. H. R. Fleming, R.F.C.	Upavon .. ..	B.E. 2 (R.A.F. design)..	Dived into ground, unable to recover after capsiz.
Dec. 5 ..	Flight Sub-Lt. B. O. Field .. ..	Hendon .. ..	M. Farman .. ..	Misjudged distance in landing.

This shows 36 deaths in 26 accidents. Of these 10 accidents occurred on R.A.F. machines, causing 14 deaths. Only 3 of these 10 accidents were clearly not attributable to the machine, 1 machine being shot down, and 2 flying into the ground in fogs. Of the remaining 16 accidents, 2 (causing 3 deaths) were on Blériots, neither directly the fault of the machine, 2 were on Bristols (2 deaths, not directly attributable to the machines, though both avoidable), 2 on M. Farman's (2 deaths, neither the fault of machine), 2 on H. Farman's (2 deaths, one possibly, but not probably, due to a jammed control), 2 on Moranes (1 lost at sea, 1 avoidable in a less heavily loaded machine but still a mistake of the pilot's), 1 on a Wight seaplane (2 deaths, clear breakage owing to an error in design, since rectified), 1 on an Avro (2 deaths, shot down in action), 1 on a Short (2 deaths, lost at sea), 3 on Sopwiths (5 deaths, 2 in a collision, 2 shot in action, 1 drowned in an experimental machine).

### One View of the Question.

The following letter may interest those who have resented this paper's criticism of various people from Cabinet Ministers to careless workmen, and Government designers, who are responsible for the bad design, and construction, or insufficient numbers of the aeroplanes flown by the R.F.C. :—

"Sir,—As a very interested reader of your valuable little paper, I feel I would like to express to you my appreciation of your courteous reply to your lady correspondent of December 16th issue. I do not venture into a discussion respecting the merits or demerits of B.E. 2c.s or R.E. 5, but when one seriously considers the number of aviators killed where the

R.A.F. productions have been so much in evidence compared with the casualty list of aviators connected with private firms, it is enough to make the most disinterested pause to think.

"I am convinced that you are doing excellent work in pointing out the necessity of providing the best possible machines for the use of our noble men who are risking so much for their country, to ensure as much as possible their safety and success in their difficult and dangerous tasks. As the wife of a R.F.C. man one naturally feels that the best in workmanship, speed and reliability should be the first consideration of those who have these matters in hand. Wishing your paper every success.  
(Signed) "ONE OF YOUR READERS."

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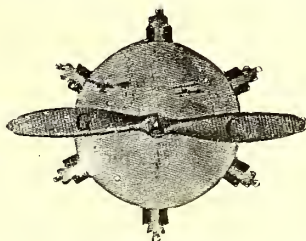
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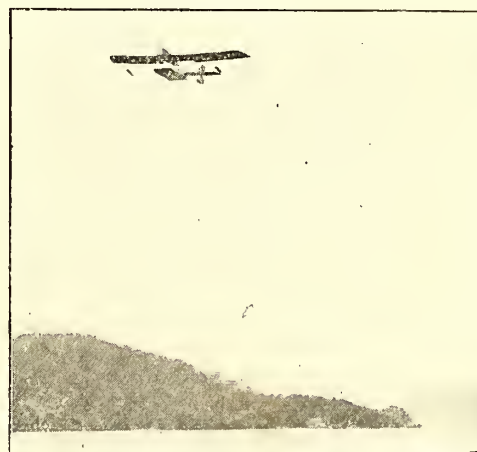
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## Naval and Military Aeronautics.

### GREAT BRITAIN.

From the "London Gazette," January 5th, 1915.

#### ADMIRALTY, December 31st.

Acting Flight Lieutenant Robert Hilton Jones has been confirmed as flight lieutenant. Dated November 12, 1914.

#### WAR OFFICE, January 5th.

REGULAR FORCES.—The undermentioned officers of the Special Reserve of Officers, and Territorial Force, are commissioned for service in the field:—

#### CAVALRY.

21ST (EMPRESS OF INDIA'S) LANCERS.—Lieutenant Eric Lewis Conran (flight commander Royal Flying Corps, Military Wing), from the 2nd County of London Yeomanry, Territorial Force, to be second lieutenant, and to be seconded. Dated April 17th, 1913.

#### FOOT GUARDS.

GRENADIER GUARDS.—Captain (Honorary Lieutenant in Army) Robin Grey (flight commander Royal Flying Corps, Military Wing), from Warwickshire Royal Horse Artillery, Territorial Force, to be captain, and to be seconded. Dated November 3rd, 1914.

#### INFANTRY.

THE ROYAL FUSILIERS (CITY OF LONDON REGIMENT).—Captain Reginald Percy Mills (flying officer Royal Flying Corps, Military Wing), from 5th (Special Reserve) Battalion, to be second lieutenant, and to be seconded. Dated August 14th, 1913.

THE KING'S (LIVERPOOL REGIMENT).—Lieutenant Gilbert William Mapplebeck (flying officer Royal Flying Corps, Military Wing), from 4th (Special Reserve) Battalion, to be second lieutenant, and to be seconded. Dated May 8th, 1913.

THE NORFOLK REGIMENT.—Lieutenant Leslie Da Costa Penn-Gaskell (flying officer Royal Flying Corps, Military Wing), from 3rd (Special Reserve) Battalion, to be lieutenant, and to be seconded. Dated October 1st, 1914. Second Lieutenant Oswyn George William Gifford Lywood (flying officer Royal Flying Corps, Military Wing), from Special Reserve of Officers, to be second lieutenant, and to be seconded. Dated August 5th, 1914.

THE DORSETSHIRE REGIMENT.—Lieutenant Louis Arbon Strange (flying officer Royal Flying Corps, Military Wing), from Special Reserve of Officers, to be second lieutenant, and to be seconded. Dated July 30th, 1914.

THE ESSEX REGIMENT.—Lieutenant (temporary captain in Army) Walter Lawrence (flight commander Royal Flying Corps, Military Wing), from 7th (Territorial Force) Battalion, to be lieutenant, and to be seconded. Dated October 1st, 1914.

SEAFORTH HIGHLANDERS (Ross-shire Buffs, the Duke of Albany's).—Second Lieutenant (temporary captain in Army) Christopher William Wilson (flight commander Royal Flying Corps, Military Wing), from Special Reserve of Officers, to be lieutenant, and to be seconded. Dated October 1st, 1914.

THE GORDON HIGHLANDERS.—Lieutenant Robert Ogilvie Abercromby (flying officer Royal Flying Corps, Military Wing), from Special Reserve of Officers, to be lieutenant, and to be seconded. Dated October 1st, 1914.

[There appear to be one or two errors in the above list. Capt. Conran, as a Flight Commander, R.F.C., is already a temporary captain in the Army. Mr. Abercromby's name is spelled thus in the current Army List and not as in the list above.—Ed.]

\* \* \*

A Supplement to the "London Gazette" of January 5th, published on January 6th, contains the following military appointments:—

#### WAR OFFICE, January 6th.

SPECIAL RESERVE OF OFFICERS.—Supplementary to Regular Units or Corps.—Royal Flying Corps (Military Wing).—The undermentioned second lieutenants (on probation) are confirmed in their rank: Cyril M. Crowe and Geoffrey H. Eastwood.

\* \* \*

A Third Supplement to the "London Gazette" of January 5th, published on January 7th, contains the following appointment:

#### WAR OFFICE, January 7th.

REGULAR FORCES.—Establishments.—Royal Flying Corps (Military Wing).—Lieutenant Frederick A. Wanklyn, Royal Artillery, from officer in charge of transport (graded as flight commander), Central Flying School, to be a flight commander, and to be temporary captain. Dated November 26th, 1914.

\* \* \*

#### From the "London Gazette," January 8th, 1915.

A Second Supplement to the "London Gazette" of January 8th, published on January 11th, contains the following military appointments:

#### WAR OFFICE, January 11th.

REGULAR FORCES.—Establishments.—Royal Flying Corps (Military Wing).—The undermentioned second lieutenants, Special Reserve, to be flying officers. Dated December 18th, 1914: Arthur M. Wynne and Thomas F. D. R. Aikman.

SUPPLEMENTARY TO REGULAR UNITS OR CORPS.—Royal Flying Corps (Military Wing).—Geoffrey Harold Brinkman McCall to be second lieutenant (on probation). Dated Dec. 20th, 1914.

#### NAVAL.

The following appointment was made at the Admiralty on January 7th:—

ROYAL NAVAL AIR SERVICE.—Mr. A. V. Tabor, entered as probationary flight sub-lieutenant, with seniority January 6th, and appointed to the "Pembroke III," for Royal Naval Air Service, to date January 11th.

\* \* \*

The following appointments were made at the Admiralty on January 9th:—

ROYAL NAVAL AIR SERVICE.—Flight Sub-Lieutenants—A. F. Bettington, T. Spencer, and F. G. Andreaa, to the "Pembroke III," additional, for Royal Naval Air Service, to date January 1st.

\* \* \*

The following appointments were made at the Admiralty on January 11th:—

Lieutenant-Commander A. M. Longmore promoted to acting commander, with seniority, January 5th.

Temporary Surgeon A. L. Dykes, M.D., to the "Pembroke III," for Naval Air Service, to date January 9th.

\* \* \*

By Order in Council approval has been given to the following proposals of the Board of Admiralty regarding the counting of time for increase of pay, etc., for pension of men entered in the Royal Naval Air Service:—

(1) The active service of all ratings in the Royal Naval Air Service whether they are lent from the Active List of the Royal Navy or entered direct under special engagement for a period of service in the Royal Naval Air Service to be followed by service in the Royal Fleet Reserve (Air Service Section), to count as continuous service for all purposes.

(2) Men lent from the Active List of the Royal Navy to the Royal Naval Air Service to count their active service in the Royal Naval Air Service for pension and gratuity either in their Naval rating or their Air Service grade, whichever is the more advantageous to them.

(3) The time served in the Royal Naval Air Service by men lent from the Active List to count, on reverting to the general service, towards increase of pay in the general service rating held during the period.

(4) Men transferred from the Military Wing, Royal Flying Corps, to the Royal Naval Air Service in no case to receive pensions less than those which equivalent ranks in the Military Wing, Royal Flying Corps, are allowed.

\* \* \*

Considerable excitement was created on Sunday in London and Southern England by wild rumours of the presence of hordes of Zeppelins and Taubes over Calais and Dunkirk en route for England, and forthwith the Anti-Aircraft Brigade squinted down the muzzles of their pom-poms and the Metropolitan Special Constables polished up their "sticks" in pleasur-



able anticipation of a scrap. Various aeroplanes also evolved and saw nothing.

As far as can be gathered, a solitary, and doubtful, Zeppelin, and three or more authentic German aeroplanes or seaplanes paid Calais a visit on Saturday night and Sunday morning, flying via Furnes and Dunkirk. A quantity of ballast of a rather dangerous nature was discharged on the town, but apparently little damage was done. Reuter's mathematical expert and other journalists estimated the number of aeroplanes to have been twelve or sixteen.

\* \* \*

Judging from various accounts of the action off Heligoland between airships, aeroplanes, cruisers, submarines, and destroyers, it appears that the airships might very probably have been brought down had our flotilla been equipped with small, fast-climbing scouts. When one recalls the extraordinary climbing rate of the Sopwith "tabloid," and remembers that the 100-h.p. Sopwith machine which won the Schneider Cup, was very nearly as fast with her floats as the 80-h.p. "tabloids" are without floats, it occurs to one that it would not be a bad idea to equip our seaplane carriers with at least one machine of this type.

These machines are so small that they can easily be stowed away where a bigger machine could not, and owing to their small size and general handiness it would often be possible to use one of them when it was not worth while to send out one of the bigger machines, which are, of course, primarily intended either for carrying a big load of bombs or else a big supply of petrol for long distance reconnaissance.

There are distinct possibilities in a small single-seater "tabloid" capable of carrying perhaps fifty or sixty pounds of bombs and so light that they could be pulled off the top of a wave at one jump, instead of needing a long run to gather speed on the water.

\* \* \*

An account of the raid on Cuxhaven is given by Chief Mechanic G. Budds, who writes to his father at Minster, Kent:—

"At daybreak on Christmas morning our machines started away to give the Germans a shock. I was mechanic-observer on Flight-Commander Oliver's machine. We had a fine time. Everyone gave us a warm reception in the shape of bullets, but neither the fleet nor the land batteries managed to find the mark, although they were near enough. When you can

hear the bullets whizzing round in your vicinity I consider that it is quite close enough; all the more so when you are 800 to 1,000 feet up in the air.

"At all events, we escaped them all—not by ordinary flying though. The pilot was an absolute marvel; he was bringing the seaplane up and down, right and left; in fact, it was all over the place, and the Germans could not find the range. I attribute our escape to these manoeuvres alone. After a long flight, during which we dropped our bombs on some military place, we made out to sea, where we came down, and were picked up by a British submarine.

"Just fancy Christmas Day—first in a ship through mine-fields, then on a seaplane over the enemy's fleet and forts, and lastly brought back in a submarine! During the homeward trip we had the gramophone going with all the latest music, and had chickens, Christmas pudding, custard, and jellies for dinner. How's that, Dad, for a submarine in the heart of the enemy's fleet in war-time?"

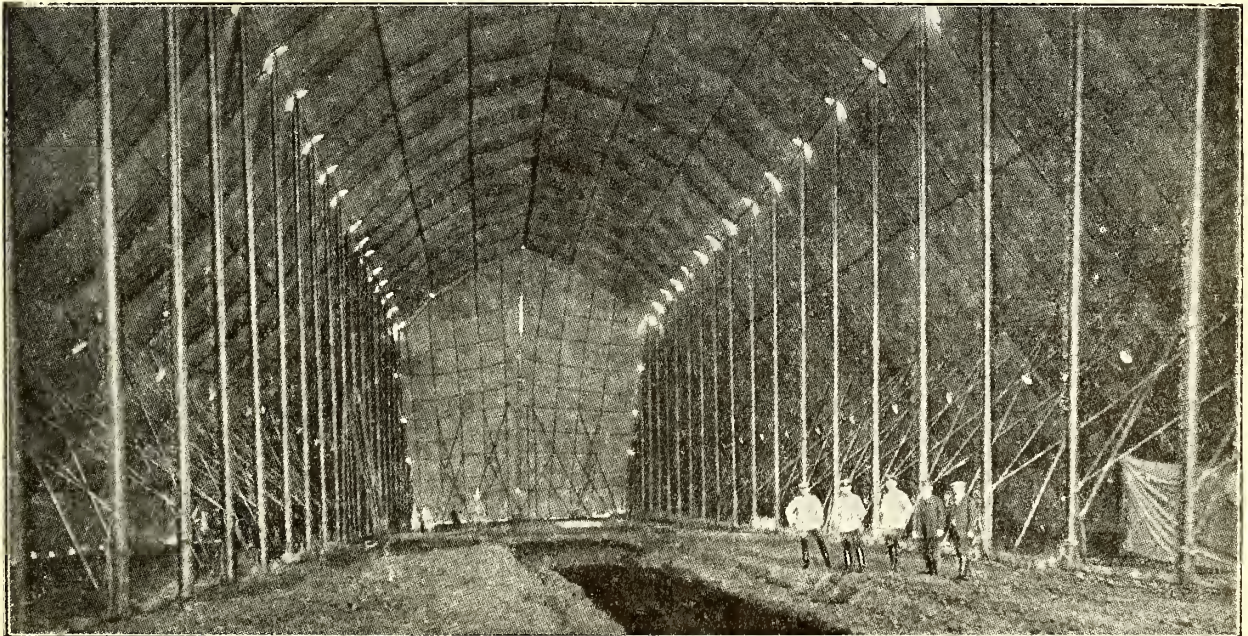
\* \* \*

The Zeppelin situation was rather neatly summed up by a stoker rating who appeared at the Guildhall Police Court last week. According to the "Express" he was a stoker on one of the ships which went to Cuxhaven and had come to London on leave. He was charged with being found intoxicated. The alderman, hearing that the man was in the Cuxhaven raid, let him go with a warning.

His account of the affair, told to the policeman who charged him, was as follows:—"It was a rare old sight when the German Zeppelins came out, but [with emphasis] you should have seen them clear when our flies went up at 'em. The Zepps are no good. They take too long to turn tail, and then show such a lovely beam to pot away at. Just cop 'em on the beam and they are done for."

\* \* \*

When one makes an error it is always just as well to own up to it as soon as it is pointed out. A friend of THE AEROPLANE draws attention to the fact that Lieut. Erskine Childers, R.N.V.R., is not navigating officer of H.M.S. "Engadine." The error is perhaps more technical than actual, for while the post of navigating officer of a ship of war entails certain definite and distinct duties, which may perhaps not fall to the lot of Mr. Childers, one cannot imagine that his intimate knowledge of the North Sea and especially of the German coast



The Interior of the Transportable Airship Shed illustrated on page 28.



thereof, has not been utilised in the navigation of the ship on which he serves.

Apparently also an error was implied in referring to the speed which can be raised on the cross-Channel steamers by Naval engineers. One is told that the engineer officers of the "Engadine," "Riviera," and "Empress" are the same as those who ran the boats before the war. One naturally has the greatest respect for these officers who have deliberately stuck by their ships when transferred from peaceful passenger carrying to the dangers of the mine-strewn North Sea, and it is well to chronicle their patriotism in volunteering for such duty. Of course the reference should have been to the speed of these ships when driven by their engineers on Naval service.

#### MILITARY.

The following passages from the report of the official Eye-witness, dated January 8th, and published on January 11th, deal with aircraft:—

According to the reports of aviators, whole districts in Southern Belgium are now flooded, for the Scheldt, as well as the Lys, has overflowed its banks. . . .

It is extremely hard to conceal the position of trenches from an aerial observer, and once their position is notified to the guns and the exact range is obtained it is not long before a whole length of trenches will be blown in and entanglements, trous-de-loup, and every form of obstacle, however, ingenious, swept away. That the moral effect is very great is shown by the written and verbal evidence of prisoners who have lately been captured. The Allied artillery is gradually assuming a superiority over the German, a factor of great importance in the prosecution of our general offensive.

It should be particularly noted that this superiority can only be retained so long as adequate supplies of aircraft are maintained.

\* \* \*

From information gathered from various sources it appears that Captain W. Picton Warlow, R.F.C., who was reported as missing, disappeared while flying a Blériot from France to England, and it is feared that he must now be given up as lost. Apparently aeroplanes which are not actually damaged, but have merely lost their lift owing to continued use, are sent back to be overhauled, and one assumes that officers returning home on leave, or being sent home for some special duty, are allowed to fly them back.

Under the circumstances it does not seem a particularly well advised system. Flying the Channel to take a new machine to France in a hurry is a matter of military necessity, or at any rate, it accelerates delivery and decreases the work of the land and sea transport services, but machines which are being sent back for overhaul can, one imagines, easily be accommodated on the empty ships, and if they are slightly damaged in handling it does not matter.

Capt. W. Picton Warlow, of the Welch Regiment, was appointed to the Royal Flying Corps on June 7th, 1913, and was promoted to Flight Commander in May, 1914. He was born on April 6th, 1884, at Bridgend, Glamorgan, and took his certificate, No. 451, at the Bristol School at Brooklands, the certificate being dated April 1st, 1913.

\* \* \*

It was announced on January 6th that Mr. T. W. Weeding, Clerk of the Peace for Surrey and Clerk to the Surrey County Council, had received official notification from the War Office that his son, Second Lieutenant J. R. B. Weeding, the Welch Regiment, had been killed in action in France. Soon after the outbreak of war Mr. Weeding joined the Royal Flying Corps, and on October 28th obtained a commission in the Welch Regiment.

He was thirty-two years of age and had long been keenly interested in aviation. He was a well-known visitor to Brooklands ever since the day when his brother, Capt. T. Weeding, of the Royal West Surrey Regiment, learned to fly. All will offer their very sincere sympathy to his family.

\* \* \*

An officer of the Royal Horse Artillery writes:—"They had

a new machine up in the sky for observation purposes. All the Tommies were peering at it as a Zeppelin, but it is some sausage-shaped captive balloon or a kind of man-lifting kite. I am afraid this new apparatus will help them to know all about us and our location. To-night our guns have been 'biffing' at it. . . . The best help of all are the aeroplanes; we had three of ours up to-day. One of our batteries is skilfully hidden in an orchard. We passed near it, but were afraid to approach close unless we might have been spotted from the distance and given away the exact position of guns and men."

#### FRANCE.

The following passage from the report of the French Official Eye-witness published in Paris on January 7th deals with aircraft:—

In aerial warfare our aviators, in spite of the atrocious weather, showed great activity. Several of them in the course of reconnaissances had their machines struck. Two lieutenants were slightly wounded by bullets.

On the right front successful bombardments were carried out. Twenty bombs were dropped on the railway station at Metz on Christmas Day and six on December 26th. This was our reply to the Zeppelin raid on Nancy. Since December 26th no Zeppelin has been seen, while the railway stations of Château Salions, Remilly, Arnaville, Thiaucourt, and Heuville have been bombarded on several occasions, as have also been concentrations of troops and bivouacs both by day and night.

On Christmas Day 12 bombs were dropped on a company at Gercourt, 4 on a bivouac at Dondrien, and 2,000 darts on wagons and infantry at Nampoeil. On the 26th 10 bombs and 3,000 darts were dropped. On the 27th 8 bombs were launched against a captive balloon on the heights of the Meuse, and on the 29th 2,000 darts were showered on a detachment at Dondrien. On the 31st 1,000 darts were dropped on troops at Saint Hilaire. A German aeroplane flying towards Paris was stopped and driven off. The night of December 25th was very clear, and notwithstanding the high wind, aviators went up at seven o'clock in the evening and passed the enemy's lines at a height of 16,000 metres.

[This is Reuter's translation, as reported by numerous papers; the height was probably 1,600 metres (5,200 ft.), and not 52,000 feet, which is over double the world's height record.—Ed.]

They observed a well-lighted camp, and dropped bombs, the effect of which they were able to see. When the first bomb fell all lights were extinguished. On their return journey the aviators were followed by searchlights, and star shells were also thrown up. They kept at a great height, and escaped.

Two of our aviators have fallen into the hands of the enemy owing to the breakdown of their engines. We got news of them in a letter which a German aviator dropped at Dunkirk. The following are the most interesting passages in the letter: "We met with a bad accident yesterday, but we are still alive. Our motor was working splendidly when we passed over the lines at Ypres, then we were subjected to a violent cannonade between Menin and Courtrai. At a height of 2,400 metres the motor began to misfire. We tried to get back, but still the engine would not work. We could see Ypres, but our machine continued to fall. With rage in our hearts we were obliged to land. During our descent the guns continued to fire, and the aeroplane was tossed about by the airwaves caused by the bursting of the shells. The infantry also fired on us, but we got safely to the ground. We immediately tried to burn our machine, but we could not do so because the German soldiers approached, threatening to fire at us, and the petrol refused to light. Finally my comrade fired a shot with his rifle into the reservoir. Then there was a regular hail of bullets. I succeeded in lighting the petrol with my last match. I do not know how we escaped, because we were fired at at point blank range."

[For the benefit of young officers one may point out that the proper way to set a machine alight is to put a couple of re-

volver bullets into the tank and then fire with the muzzle of the pistol right in the stream of petrol. It is no use fiddling about with matches.—Ed.]

PARIS, Thursday (January 7th).

This afternoon's official communiqué stated:—"Our batteries put to flight some German aeroplanes which were flying towards Dunkirk."

\* \* \*

The following official message was issued verbally from the French Press Bureau on Monday, January 11th:—

The German aviators who flew over Dunkirk threw a number of bombs and caused five victims among the civil population.

At Malo-les-Bains, near Amiens [? near Dunkirk? Ed.], a German aviator was chased by a French airman on a monoplane and brought down, the German machine falling in our lines. The pilot officer was killed and his companion wounded.

\* \* \*

It was officially stated in Paris on January 11th that M. Millerand, Minister of War, accompanied by General Gallieni, his Chief of Staff, General Clergere, and General Hirschauer, Director of Aeronautics, proceeded on that day to the outskirts of Paris, where Captain Morache, Chief of the Anti-Aircraft Corps, invited M. Millerand to inspect the camp. Searchlights and anti-aircraft guns were tested in presence of the Minister, who expressed his satisfaction with the arrangements.

The people of Paris are shortly to be advised of the measures for the reduction of the lighting of the city in certain contingencies, so that, if alarm be given, there may be no panic.

\* \* \*

The Mayor of Dunkirk in a notice implores the population not to come out into the streets when German aeroplanes are over the city, and, above all, not to run to the spot where a bomb has fallen.

The victims of the recent air raid received a public funeral last week.

\* \* \*

The pay of French military aviators, which, so far, had been the same as that of soldiers of similar rank in other arms, is, from the beginning of this year and for the duration of the war, to be substantially increased. Qualified pilots who are N.C.O.s will receive 4 f. a day, corporals and privates 2 f. The pay of pupil-pilots will be half of that for qualified men.

\* \* \*

A correspondent of the "Matin" in Alsace reports:—"On January 3rd the action began with a violent cannonade. One of our aeroplanes managed to reconnoitre the enemy's position, and brought back the news that there was a movement of troops on the south of Sainte-Marie, and that some of the Prussian advance posts were retiring towards Sainte-Croix.

\* \* \*

Mr. H. J. Greenwall, the "Express" correspondent in Paris, reported on January 5th that a Taube returning from an abortive raid on Abbeville on January 4th was brought down by British guns. The aviator and the observer were both killed.

\* \* \*

The special correspondent of the "Daily Mail," in a message from the North of France under date Wednesday, 6th, says:—

"A German Zeppelin airship was seen early this morning skirting the coast near Gravelines, when it turned westward towards England. It is rumoured that two other Zeppelins had preceded it.

"Thence onward throughout the day Dunkirk was subjected to aeroplane raids. One following the other the German aeroplanes approached the town to drop their bombs. As soon as they got within range the guns opened fire from military points about the town. One excellent shot from an anti-aircraft gun at Fermyn Station exploded right underneath one aeroplane, an Aviatik, and made it totter visibly for ten seconds. The airman could be seen flexing one wing and then the other, attempt-

ing to recover his balance. This done, he turned and flew away down wind at a speed estimated to be 120 miles an hour.

"Then six German aeroplanes beat up slowly against the wind and hung poised over the town till the fire of rifles and machine guns forced them to turn tail and run down the wind.

"From the small number of bombs dropped on this occasion one may infer that the gun-fire was effectual in keeping the raiders from getting close enough to their marks, whatever these might be, unless, of course, the aeroplanes had some objective in connection with the Zeppelins.

"Nothing was heard during the day concerning the Zeppelins' achievements, and no news has reached here yet concerning their return."

[The above, taken in conjunction with stories of a Zeppelin over Chelmsford and another over Colchester, and another over Dover, and one brought down in the Thames, all on that day, leads one to believe that an airship of some sort did appear somewhere in the Channel in the calm of the morning. If it was a hostile ship evidently the R.N.A.S. missed it somehow. Later in the day the wind must have risen considerably, for one reads of the German aeroplanes—which are quite fast—beating up slowly against the wind, and doing 120 m.p.h. with it. Apparently the Aviatik mentioned was hit, or else the pilot was—the description is rather good.—Ed.]

\* \* \*

The "Chronicle's" correspondent in the North of France reported on January 7th that German aeroplanes again visited Dunkirk on that day. Three of them made their appearance soon after daylight. They dropped several bombs and then disappeared. There was no loss of life or serious injury.

Two Aviatiks dropped bombs on Furnes early on the same day.

\* \* \*

On Saturday, January 9th, bombs were dropped on Armentières, Abbeville and Doullens.

\* \* \*

Another raid was made on January 10th over Dunkirk by a number of German aeroplanes, estimated variously at from 12 to 15, and resulted in the loss of six lives—a soldier, a Red Cross worker, and four civilians. The aeroplanes appeared at 11 a.m., and their arrival was signalled by the pealing of a bell and the hoisting of a blue and white flag. The inhabitants, who had been collecting in small groups, quickly responded and the main thoroughfares emptied. The aeroplanes circled over the town and suburbs, and dropped, in the course of the four hours (from 11 till 3) during which the visitation lasted, some 50 bombs. Five of the deaths occurred in the little suburb of St. Malo-les-Bains, the sixth in Dunkirk itself.

Calais was also visited by a Taube on January 10th, about 1.30. It was flying very high, and though efforts were made to bring it down with machine-guns these proved ineffective. No damage was done.

The "Daily Chronicle's" correspondent, describing the performance with vigour and vim, says:—

"After dropping their missiles the airmen were preparing to leave when two Belgian aeroplanes were seen coming to the attack. A thrilling encounter in the air was then witnessed. Although outnumbered (by seven to two) the Belgians fought gallantly and completely outmanœuvred their opponents. They rose to a height of 7,000 ft., and having gained this advantage fired at the Germans with mitrailleuses. It was exceedingly difficult and dangerous work, and demanded the greatest skill, for the slightest slip resulting from the fairly high wind blowing at the time would have sent airman and machine to the ground."

[This last remark is, of course, pure rot, and anyhow, from what one hears of the Belgian aviators now left on the Continent, one is inclined to disbelieve this part of the story. The same correspondent says that one German machine was brought down and the pilot killed.—Ed.]

\* \* \*

It was reported on the 11th that two German aeroplanes attempted to fly over Paris on Sunday, one from the direction of Montdidier and Pontoise and the other from Dammartin. French aircraft put the invaders to flight.



**GERMANY.**

The following passage in the German war news officially circulated through German wireless stations and received by the Marconi Company deals with aircraft:—

BERLIN, January 5th.—Main Headquarters reports as follows:—German airmen have dropped bombs on the outskirts of Coudekerque and Rosendaal on the ammunition stores of the British Army situate there. One bomb set fire to and destroyed part of the place (village). The total number of killed and injured in both places amounts to 100.

\* \* \*

The "Allgemeine Zeitung" on Sunday, January 3rd, printed the following:—"Contrary to other reports, we learn from a trustworthy source that the English raid on Cuxhaven caused no damage whatever. Every one of the bombs dropped by the English seaplanes missed its mark. On the other hand, it may be taken as certain that the English lost four seaplanes in the attack. Moreover, credible eye-witnesses assure us that the English light cruiser "Arethusa" was damaged by a bomb. On another English ship, which was also struck by several German bombs, an outbreak of fire was observed. Finally, two English destroyers were damaged. Hence the English have little reason to be satisfied with the result of their attack, which showed once more how very much on the alert the German coast defence is."

[It is, of course, perfectly true that we lost four seaplanes, but no other damage was done to our flotilla, and it is generally considered that the "moral and intellectual" damage done to Germany was value at the price.—Ed.]

**RUSSIA.**

The "Morning Post's" Petrograd correspondent reports the following:—

A curious aviation incident happened a while ago between the opposing trenches, a few hundred yards apart. A Russian aviator, having completed a reconnaissance, was returning, and apparently feeling fairly safe after having got past the artillery positions, came down preparatory to landing behind his own lines. He was promptly fired at by the Germans, who put three bullets through the benzine tank, and the aviator landed about half-way between the opposing trenches.

The Germans did not continue shooting, but thinking the prize was secured rushed out empty-handed to bring in the machine. The Russians did the same, and a hearty bout of fisticuffs took place between the two lines for the possession of the prisoner and aeroplane. The Russians finally saved their man, and ran off with the aeroplane, but were then fired upon from the German trenches. [The "M.P." man must think of something more novel than this if he wants to keep up his reputation as a news provider. The story has already been told of Belgian and French aviators, and probably circulates locally about Servians and Montenegrins, whether these countries have aviators or not.—Ed.]

However, on the following day the Russians got even by bringing down a German aeroplane behind their own lines. The Germans carry besides their ordinary tank a supplementary one which can be turned on either to prolong the voyage or to save themselves if the first tank is damaged. Luckily, on this occasion, a Russian bullet severed some essential connecting part and the German aviator was compelled to plane down. He landed a good way off in a field, and the aviator pluckily repaired the connections before the Russians could come up, and started the propeller. It struck him on the head killing him instantaneously, while the officer who usually accompanies German aviators was thrown out. When the Russians ran up they caught the officer with all his notes and, of course, captured the machine. [This is a trifle more ingenious, but not very convincing, for most German machines are fitted with dual ignition and the engine can be started from the ignition switch. It is possible, however, that after the pilot had pulled the propeller over a few times the passenger may have switched on just when the pilot was not expecting it.—Ed.]

**BELGIUM.**

It is reported that the Germans continue night and day fortifying all their positions in Flanders. They have mounted several machine guns on the belfry at Bruges against raids by the Allies' aircraft. They are reported to be putting up new Zeppelin sheds there, and to be forming a big aviation centre just outside the town. Several seaplanes and an airship are said to be at Zeebrugge.

\* \* \*

A British aviator, after a successful flight in the direction of Zeebrugge, was forced to come down in a flooded field. The wheels of his monoplane sank into the swampy ground, and he was somewhat injured. French soldiers rescued him. [The moral for the British authorities is: Don't use monoplanes, when biplanes are faster, climb better, and can be pancaked at a standstill.—Ed.]

\* \* \*

The "Echo Belge" states that in view of the danger to the Zeppelin sheds caused by the air raids of the Allies over Brussels the Military Governor has promised £1,000 to anyone capturing a hostile aviator dead or alive.

\* \* \*

The Sluis correspondent of the "Telegraaf" reports that one of the Allied aeroplanes reconnoitring the Flanders coast was hit on Saturday, and came down at Zeebrugge. The French pilot and a Belgian observer were captured.

**HOLLAND.**

According to Mr. Feibelman of the "Express" (Amsterdam, January 8th), the great invasion by Zeppelin is to take place at the end of January, presumably when the moon is approaching the full. The vast fleet of 70 Zeppelins has now dwindled to 10, which seems much more reasonable. Ten Zeppelins mean about 25 tons of explosives at most, and more probably 15. Not more than 10 or 12 men are likely to be carried by each ship, so there is likely to be much disappointment among the "hundreds of German airmen," whom Mr. Feibelman states to have volunteered. The Zeppelin Fleet is to be escorted by "aeroplanes and hydroplanes, and many destroyers and torpedo-boats." Just how so many craft of various speeds will keep station is not explained, nor is the utility of bringing hydroplanes, which are merely high-speed fair-weather motor-boats. The story comes from Holland, which is not a particularly ingenious country where lies are concerned.

However, the ten Zeppelins and sundry aeroplanes seem a rational proposition, so we may as well prepare for them.

**DENMARK.**

The special correspondent of the "Telegraph" wiring on January 9th from Copenhagen, says:—"A German aeroplane, with two passengers, was observed at Esbjerg and its environs, flying only about forty metres above the ground. The passengers were waving their hands to the inhabitants. The aeroplane disappeared after an hour.

"On account of this visit, the 'Ribe Stiftstidende,' an old provincial paper of high standard, prints an article, saying, 'We hope the German military authorities will instruct their aviators not to fly over neutral territory, as the aeroplanes of belligerent Powers should have nothing to do in neutral countries, and we trust our Government will call the German Government's attention to the matter, pointing out that similar flying excursions will not take place in future without risk to the passengers and their machines. In neutral Switzerland they shoot at them without ceremony.'"

**MONTENEGRO.**

It was reported from Cetinje on January 10th that on the previous day an Austrian aeroplane appeared over the town and threw two bombs. One did not explode. The other destroyed a shop. Both bombs fell in the neighbourhood of the hospital. No one was injured. Another Austrian aeroplane having flown over Budua, also came towards Cetinje. The Montenegrin batteries, however, forced it to change its course towards Cattaro. While passing over the village of Bieloche the hostile



aviator noticed a crowd of women congregated before the church. He threw three bombs without effect. One of the bombs failed to explode. [It is rating the ability of the Austrian observers rather high to assume that they could at once spot the location of a hospital and of a crowd round a church door in cramped little towns like those of Montenegro, and one may set these stories down among Reuter's other inventions.—Ed.]

#### ITALY.

News comes to hand that Captain Guiseppi Martinolo, the LeRhône engine-concessionaire, was killed at Cameri on December 27th while piloting a Gabardini monoplane.

The new military airship Y has been doing a considerable amount of flying at Bracciano lately.—T. S. H.

#### EGYPT.

The following story was told by the "Times" correspondent at Cairo, on January 5th, of the escape of a captain and a French pilot in an accident to a seaplane in the Sinai Peninsula.

The engine, which had previously given trouble, failed some 20 miles inland. The pilot planed down, and, landing on a rock, was thrown out on his head. The observer, pinned down in the wreck, was beginning to wonder whether starvation or capture would be his fate when the pilot, whom he believed to be dead, proved, first by coughing and then by struggling to his feet, that he had merely been stunned. The pilot extricated his companion, and both made for the sea. Progress was slow and difficult, the Frenchman being unable to walk more than 200 yards at a time. After taking four hours to cover five miles, the captain left his exhausted companion in the best hiding-place he could find, gave him his water-bottle, and made his way to the sea, 15 miles away, which he reached in four hours, only to find that the British warship had gone. He slept on the beach, and when he awoke the warship had returned. He hailed her and was taken on board.

The following day a landing party was sent to try to find the pilot. A party of the enemy fled before the sailors, but there was no sign of the pilot. That night the searchlight was directed on the shore, a hail was heard, a boat's crew put off, and returned with the pilot. It appears that, after sleeping off the effects of the shock, the Frenchman struggled to the sea. He went to sleep on the beach, and was roused after midnight by the searchlight falling upon his face.

[This seems to have been one of the cases in which a real amphibian chassis might have been useful. In any case the pilot seems to have been a fairly bad flier, as he ought to have been able to pancake without turning the machine onto her nose.—Ed.]

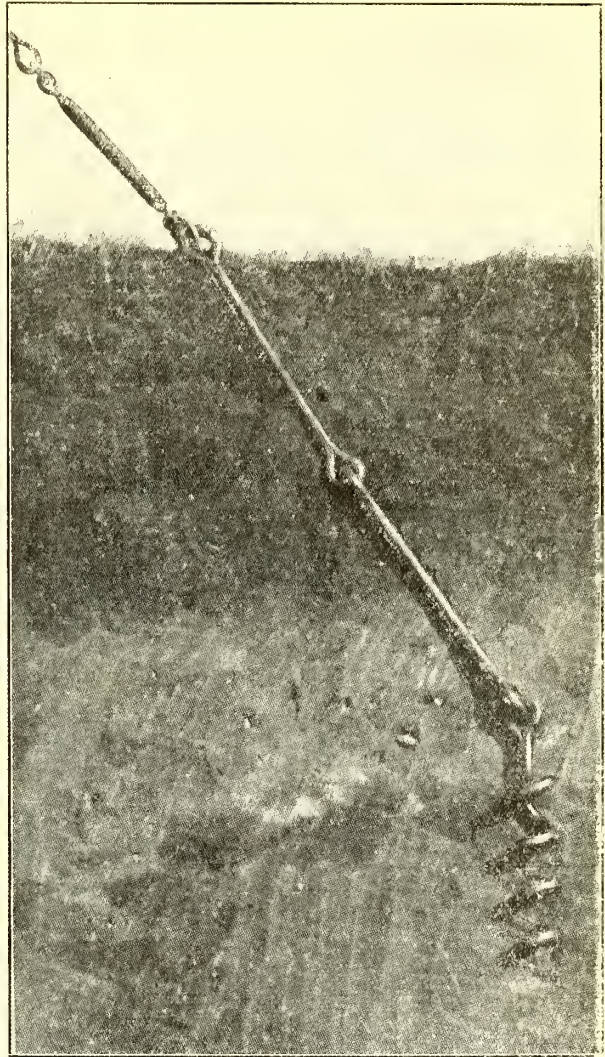
#### SOUTH-WEST AFRICA.

It was reported from Chaukiab (near Luderitzbucht) on Monday, January 4th, that a German biplane and a Taube flew over the British camp early that day from the direction of Aus. Both dropped a couple of bombs, but no damage was done. The machines were never within gun range. One bomb fell near some trenches, but did no harm. The Taube dropped bombs on the railway line several miles eastward of our position, at a place where it had been already wrecked.

#### EAST AFRICA.

Captain Willett, of Leigh, Southend, in command of one of the vessels which blocked the channel in which the "Koenigsberg" was sequestered, in the River Refigi, on the East Coast of Africa, says:—"The German cruiser had so effectively concealed herself amongst the palms by actually covering herself with foliage that it was impossible to locate her exact position. To get over this difficulty the 'Kinfauns Castle' arrived on the scene with an aeroplane. This was soon soaring over the river, and the position of the hidden cruiser conveyed to the British by means of smoke bombs. Very quickly the big guns of our ships got the range and battered the 'Koenigsberg' till she was sunk."

[One assumes the machine was one of Mr Hudson's Curtiss's from Durban, piloted by Mr. Cutler.—Ed.]



The "Earth Anchor" used in the German portable sheds. The above photograph was taken after the anchor had been subjected to a pull of 6,000 kilos (about 13,500 lbs.), the ground being then dug out so that the photograph could be taken showing a true section of its position. A similar cork-screw anchor was claimed as an "invention" by the R.A.F. some years after this was produced in Germany. Apparently the anchor is in this case embedded some six or eight feet in the ground.

#### Congratulations.

On Saturday, December 19th, the wedding took place at the Church of St. Barnabas, Kensington, of Mr. L. Howard Flanders and Miss M. Franks, of Durban, South Africa.

Mrs. Flanders was a botanist of considerable note and was employed by the Government of South Africa in that capacity. Mr. Flanders is, of course, well known to everyone connected with aviation as one of our cleverest and most practical designers, whose products have hitherto always been successful as flying machines without having had the luck to bring commercial success. He is now in the employ of Vickers, Ltd., and his latest designs give every promise of being successful in both ways.

All concerned with aviation will wish every happiness to Mr. and Mrs. Howard Flanders.



## HISTORY IN THE MAKING.

The major portion of the "Times" History of the War, Part 18, Vol. 2, published on December 22nd, is devoted to a chapter on "Military Aeronautics and the British Air Service." Any contemporaneous "history" of the War must present almost insuperable difficulties to its author by reason of the restrictions of the Censor and the present unreliability of reports, but since the chapter under review is purely retrospective, its inaccuracy is less excusable, and this is the greater pity because the majority of its readers will accept it as a textbook and set it aside for reference in that light.

The first section is devoted to introductory matter. A brief review covers the time between the experiments of Montgolfier and Count Zeppelin, and the observation is made that modern 720-h.p. Zeppelins are capable of achieving a 30-hour run at full speed, and that they can carry maxims and 15-pounders not only in the cars, but on top (which involves a load of five tons or thereabouts of petrol). It has puzzled the writer of these comments to determine the origin of the high estimation in which Zeppelins are held by the generality of daily papers, which seems to be shared in part by the "Times" historian, but the solution is to be discovered in their practice of looking up all the records ever performed by a Zeppelin and lumping them together, neglecting the fact that special preparations have been made for each individual feat. Thus, it is perfectly true that a Zeppelin has remained in the air for 30 hours (but well throttled down); another Zeppelin has travelled at 50 miles per hour (for a limited number of hours), another ship has reached 10,000 feet (with a minimum crew and a light load of fuel), and Zeppelins have left the ground with a war crew, an arsenal of quick-firers, maxims, bombs and wireless, and not too much petrol; but no Zeppelin yet built, or likely to be built for a long while to come, can travel for 30 hours at 50 m.p.h. with full load of weapons and crew, at ten thousand feet, a habit so frequently recorded by journalists.

Some really amusing paragraphs occur in the alleged history of the Royal Flying Corps and its beginnings; for instance, the surprising admission is made that the Beta, the Gamma, and the Delta were "useful rather for experiment and instruction than for serious military operations." The advent of the "Morning Post" airship is mentioned as an example of the result of the stimulation of the official world by the Parliamentary Aerial Defence Committee, but nothing is said of the fact that the ship was a "wash-out."

A graceful compliment is paid to Colonel Seely, "who, like Mr. Churchill, took a strong personal interest in aeronautics," and who saw to it that the Aircraft Factory had "Royal" tacked on to its name, "whose duties would be the higher training of mechanics, the reconstruction of aeroplanes" (inter alia, the reconstruction of box-kites into B.E.s.), "repair work for the corps, tests with British and foreign engines" (on wonderfully destructive test plant!) "and experimental work."

The article closes with a typical "Times" eulogy of Colonel Seely, the Royal Aircraft Factory and of all their doings and relations. Mention is made of the ex-Under-Secretary of State for War's figure-shifting in the House of Commons in February, 1914, when the "History" narrates how he stated that "the Army at that date possessed 161 machines, having struck off 52 from, and added 100 new ones to, the total of 113 that (he had said) existed at the end of the previous July. No doubt, this number had been increased before the beginning of the War." No doubt, the number did increase, and very largely. Incidentally, Mr. Joynson Hicks showed there were only 42 at the time when Colonel Seely claimed 161.

Then comes the inimitable "B.E." (Blériot experimental), on which experiments, to bring it up to the standard of the "trade's" machines, never cease. "The machines were of various types, but that most approved" (by its creators?) "and comprising the majority in use, was a product of the Royal Aircraft Factory, evolved after careful scientific and practical experiment in this country. It is known as the 'B.E.', and exists in a variety of somewhat (!) differing designs." "The excellence of the 'B.E.' machine probably contributed its share towards securing that individual ascendancy over the aircraft

of the enemy to which Sir John French has borne such emphatic testimony. It is stated on competent authority to have proved its superiority in two qualities of prime importance, namely, speed and climbing power."

The designs of the B.E. certainly do differ. Those particular brands which command any speed at all are unstable and of dubious strength, and those that can claim to be stable are wonderfully slow and sluggish.

Continuing, the eulogist remarks:—"The British B.E. is also declared to be handier in steering than the German 'Taube,' and much quicker in response to its controls." If the comparison is directed to the genuine "Taube," which is almost as obsolete as the "box-kite," the observation may be correct, but if the word "Taube" stands generically for all German aeroplanes, then the "Times" historian can never have studied the performances of the German Albatros, L.V.G., Aviatik, and D.F.W. biplanes. For instance, one has yet to hear of a B.E. performing a 1,000 foot vertical dive to escape an enemy aeroplane whose armament preponderates.

All honour to the "armen" of the R.F.C., but opinion will be divided as to whether they turned its "advantages" to full account because they liked it, or because they had to make the best of it when it was served out to them, or because most of them had never had a chance of flying anything better.

## Illustration Extraordinary.

Finally, come the illustrations in the "History." They are the most uninformative, incorrect, and misleading feature of the whole thing. They seem to have been scattered about the article without regard to date or design, and the reader is left entirely in the dark as to which machines were built in 1910, 1911 or 1912, and what were their capabilities and performances. To take the photographs seriatim; first of all, is a reproduction of a drawing by Mr. Joseph Pennell, labelled "Zeppelin Leaving Shed," possibly a work of art, but a very bad likeness of a Zeppelin. After various sins of omission and commission there is a photograph of a "streamlined front elevator" Maurice Farman, labelled "Two-seater Henri Farman Biplane." Overleaf is a photo of the Hon. Alan Boyle's "Avis" monoplane, with nothing to tell the reader that it is not a modern racer, and a dual control Henri Farman is called "latest pattern," although the type is over a year old. The 120-h.p. Shorthorn Maurice is branded the "Gun 'Bus," although that "pet-name" is applied by everybody in the trade to a machine of an entirely different make and type. The "Ilia Mourametz" is merely passed by as the "Aeroplane used by the Russian Army," which it is not.

The worst illustration of the whole set is that of a "French Aeroplane Attacking a German Taube." This picture was recently reproduced by a leading labour paper, the editor of which had the common sense to explain that it was a "fake." It shows a Henri Farman dual control biplane flying about twenty feet off the ground, carrying only the pilot in the front seat, who is supposed to be training a mitrailleuse on a very elderly Etrich monoplane, which is situated above his starboard bow about 50 yards away, and as many feet above the ground. The picture has been rendered the more ludicrous by an accident of the "faker" who has managed to re-touch out both the landing wheels and most of the chassis!

Finally, appears a representation of "The Royal Flying Corps in France." A little intelligence in the inspection of this photograph would have revealed to the "Times" "Historian" the presence of a marine on guard, the "Astra Torres" airship flying the White Ensign, and a Short tractor land machine, and he would have deduced a detachment of the Royal Naval Air Service, and not of the Royal Flying Corps.

In sorrow, more than in anger, one deplores the loss of a magnificent opportunity on the part of the editor of the great "Times" "History" to present to a wide public a true and informative description of our Air Services and their work. All the author has really taught the readers of this history is that certain brave soldiers and sailors go up in "those dangerous balloons," some of which are called airships, others aeroplanes, and others B.E.s, and that it is possible to see a long way from them and throw bombs and things overboard.

**FROM DENMARK.**

THE AEROPLANE'S Danish correspondent writes:—

"Flugsport," issue December 2nd, contains the following casualty list of the aerial forces, Feldflieger department: Aviator Hölzer, drowned by accident; Major Milczewski, killed by aeroplane accident; Oberlieut. Kraetke, killed by aeroplane accident; Oberlieut. Sieler, heavy wounded by aeroplane accident; Lieut. Behrenz, slightly wounded by aeroplane fall; Aviator Messerer, heavy wounded by automobile accident; Aviator Trebeljahr, slightly wounded by automobile accident; Oberlieut. von Linsingen, wounded and taken prisoner by the Russians; Aviator Landmann, taken prisoner by the Russians; Lieut. von Kippel, killed by aeroplane accident; Lieut. Klaeser, killed by aeroplane accident; Aviator Schulz, heavy wounded by aeroplane fall; Lieut. Hattendorf, heavy wounded by accident.

The first Austrian casualty list of the aerial troops, as published by "Wiener Luftschiffer Zeitung," contains the following names: Oberlieut. Bela Fessl, killed; Oberlieut. Adrario, wounded; Oberlieut. Alexay, wounded and taken prisoner; Oberlieut. Böhm, wounded; Oberlieut. Flassig, killed; Oberlieut. von Appadia, taken prisoner; Oberlieut. Kadelac, taken prisoner; Oberlieut. Mandl, wounded; Major Miller, killed by automobile accident; Oberlieut. Rosenthal, taken prisoner; Major Rosmann, killed; Oberlieut. de la Cerda, killed; Oberlieut. Schwab, taken prisoner; Oberlieut. Stauber, wounded; Oberlieut. Steiner-Götl Edler von Auring, wounded; Oberlieut. Wolf, killed.

From its Vienna correspondent, "Flugsport" has received a report of the Austrian-Hungarian aviation in the present war, from the news of which are worth rendering. The commander and since May, 1912, the organisator of the Austrian air wing department is Oberlieut. Uselac, who has recently been appointed a Colonel, and there are now 16 companies. Since the military use of the Etrich dove monoplane had ceased, the Lohner arrow biplane was the only type employed (see THE AEROPLANE, issue April 9th, side 726), but the Lohner works being unable to deal with the whole supply, the German Albatros and Luftverkehrs Gesellschaften have founded Vienna branches half a year ago, some companies being now formed thus of Albatros and L.V.G. tractor biplanes. When the war commenced, a flight headquarter was erected in Galicia under the command of the well-known record aviator and "Feldpilot," Major Philipp Ritter von Blaschke (who will be known as winning 2nd prize in the Berlin-Vienna 1912 race, with the consent of Hirth, as he only arrived to 5 kilometres off Vienna in a dangerous night flight, flying under the pseudonym of the name of his sweetheart Csakay, and being unable to marry her, owing to the Austrian Law's claim of a certain fortune, he was received in a special audience by the Emperor Joseph, who presented him with difference between the money wanted and his second prize won.—E. H.)

Oberlieut. Flassig was killed by the breaking of one of the planes on a flight at the Northern theatre of war, whereas Oberlieut. de la Cerda was killed in Serbia, on a patrol flight, he got wounded in the belly, and his passenger, Oberlieut. Gruber, in the foot. He succeeded in returning safe, bringing important news with him, but died the next day at the hospital in Dolna Tuszla, having just been rewarded the Military Cross of Merits by a cable from the Emperor and having received at the start of the war the "Signum Laudis."

Some interesting news are reported of the first flight to and from a surrounded fortress (Prezmüssl) undertaken by Oberlieut. Tauszig with a major from the headquarter as an observer and carrying instructions, letters and newspapers. They were violently fired at on both flights, and though shell pieces penetrated the planes and the fuselage, neither was hit.

**Southampton District.**

The periods of fine weather during the week were taken advantage of by pilots in general. Mr. Mahl has been busy with Sopwith seaplanes at Woolston. On Monday morning he brought a Sunbeam engined tractor out for another test. Things did not go well at first, but at the third attempt the machine went off at a great speed, and trials were successfully carried out. On Tuesday morning a Gnome engined Sopwith tractor Scout came out, and, as usually the case with these machines, the performance was splendid in every way, a great

feature being the short run required on the water. Mr. Mahl returned to Woolston in the afternoon on another Sopwith. Another Sopwith tractor—this one with folding wings—came out for its first test on Saturday morning, and during the hour it was away from Woolston quite a great distance was covered. Two land machines from Portsmouth direction passed over Hamble during the past week. The first, on Tuesday afternoon, a B.E., proceeding northwards. The second, on Saturday at midday, a tractor biplane, apparently an Avro, also flying northwards. At the time a very powerful wind was blowing, and the way the machine stood up to it was splendid.

**Poor Party!**

A daily paper writes as follows:—

"The appointment of a new Liberal Chief Whip will not be made immediately, but it is of interest to state that in influential quarters there is a strong current of feeling in favour of Colonel Seely. The office of Chief Whip, although of great importance, is not, of course, equal to that of a Secretary of State, which Colonel Seely held when at the War Office, and it is not known whether he would act as Chief Whip. But he is popular in the party, has many recommendations for the post, and there is reason to believe that he will be approached."

[Without wishing any ill will to the Liberal Party, which has, at any rate, given Sir Edward Grey and Mr. Churchill their opportunities, one hopes the above suggestion will soon be carried out, for it would bring relief to many soldiers now at the front.—Ed.]

**To Accelerate Starting.**

Rumours are abroad that considerable difficulty is experienced when aeroplanes and seaplanes are wanted at a moment's notice in getting their motors to start promptly, owing to the low temperature prevailing. It has been suggested that possibly this trouble might be removed in the case of water-cooled engines by fitting their radiators with simple unions and connecting them up with rubber hose to water heaters. In this way a constant stream of hot water would circulate through the jackets, keeping the engine ready to start up all day long. In the event of an alarm being raised, it would merely be necessary to turn off a pair of taps and disconnect the rubber tubing, a work of seconds, and the engine would be "all hot" and ready.

**Good Work.**

It is of interest to note that since the beginning of September, the Grahame-White school has turned out 32 certificated pilots, 24 of these being officers of the R.N. Air Service. During the week ending December 21st eight pupils obtained their brevet at the school, and this seems to be somewhat of a record.

A new school machine came out of the shops this week, increasing the fleet to four; another is in hand, and should be ready very shortly. The success of the school reflects great credit on the work of Mr. Ross, the manager, and on the instructors, Messrs. Manton, Russell, and Winter.

**Stop-Press News.**

Now have you heard the latest news from Dover?

It shook the natives' nerve and cool aplomb;

A horrid Hun decided to fly over

And drop a bomb!

The noise it made! It must have been terrific!

(My ears with cotton-wool I always plug),

The casualties? Well, to be specific,

Were one small slug.

This naughty bomb then made a nest so cosy

Where verdant cabbages did blush unseen,

To wound their youth and innocence so rosy!

My grief is keen.

A man climbed up a tree—I won't say quickly—

Sedately, just as you or I would do,

And as he gathered holly bright and prickly—

"Whee-e-ew!!!"

There is *one* thing I'm sure we may depend on,

The Hun said as he winged his airy way,

"'Tis better far than any flight at Hendon,

"And nought to pay!"



## School and Weather Reports.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
Hendon ...	Fine	Fine	Wet	Wet	Show'y	Fine Windy	Rainy
East Coast ...	Dull but Fine	Dull Fine	Show'y	Wet	Fin	Windy	Fine a.m. Wet p.m.
South Coast...	Fine	Rain	Rainy	Rainy	Show'y	Fine	Rainy

**Hendon.**—AT THE GRAHAME-WHITE SCHOOL.—Instructors: Messrs. Manton, Russell, and Winter. Pupils with instr.: Prob. Flight Sub-Lieuts. Souray, Hallifax, Hilliard, Petters (new pupils), Reed, Walmesley, Besson, Digby, Wood. Strts. alone: Prob. Flight Sub-Lieut. Besson. 8's or circs. alone: Prob. Flight Sub-Lieut. Mills, Driscoll, and Mr. Greenwood. New machine just out; making four school machines now and another well in hand, which should be ready very shortly.

**AT THE RUFFY SCHOOL.**—Pupils receiving instruction: Messrs. Aoyang, Grahame, Donald, Marriott, Kenworthy. Instructors: Messrs. Herbert James and Howard James. Machines in use: 60 h.p. Gnome Caudron, dual control, and 45 h.p. Anzani, single seater.

**AT BEATTY SCHOOL.**—Instrs.: Messrs. Geo. W. Beatty, W. Roche-Kelly, E. Baumann and G. Virgilio. Pupils with instr.: Messrs. Bond, Anstey Chave, Cornish, G. Merton, G. Beard, G. Donald, M. J. V. Miller, Gerrit Forbes, H. Bright, R. Laver, S. Caws and Lieut. Bannatyne. Machines: Two-seater biplanes with "dual" control.

**A2 THE HALL SCHOOL.**—Instr.: Mr J. Rose. Pupils rolling

alone: Mr. Waterson (8), Mr. Davy (4), Mr. McConnochie (12). Strts.: Mr. Williams (4), Mr. McConnochie (6). 8's and circs.: Mr. J. Lloyd Williams. Machines: Hall biplanes.

**AT THE LONDON AND PROVINCIAL AVIATION Co.'s SCHOOL.**—Instrs.: Messrs. Warren and Smiles. Pupils: Messrs. Laidler and Abel (strts); England, Derwin, Moore, and Collett (rolling) Machines: L. and P. tractor biplanes.

**Windermere.**—AT THE NORTHERN AIRCRAFT Co.'s SCHOOL.—Continuous rain and high wind delayed school work considerably. Mr. Lashmar was out with Mr. Rowland Ding on Monday doing landing practice. On Tuesday a gallant effort was made to brave the rain, but it got into the distributor of the Gnome, and stopped it two or three miles up the lake. During the tow home the absence of soap and towels alone hindered the occupants of the machine from taking full advantage of the opportunities afforded by the bath-like cockpit of the machine.

## Accelerated Metal Work.

The Blackburn Aeroplane and Motor Co., Ltd., have now completed their new plant at Olympia, Leeds, and are particularly well equipped for producing steel stampings, sheet metal blankings, cowl, tanks, strainers, and eyebolts. They are also in a position to give quick delivery of all kinds of aeroplane parts, especially in repetition fittings. Those who have seen the latest products of the Blackburn Company cannot fail to have confidence in their workmanship, and under the reorganised works system deliveries can be given promptly.

## Variable Speed?

Mr. Clarence Winchester ("Ornis") relates the following:—"A lady friend of mine saw a military machine passing Brighton at some three or four thousand feet altitude. She was naturally interested and related the incident to me in this style: 'Yes: and it was going so slowly. I thought aeroplanes were much more exciting. This one actually crept along. In fact, I kept up with it all along the promenade.'" There must have been some wind.

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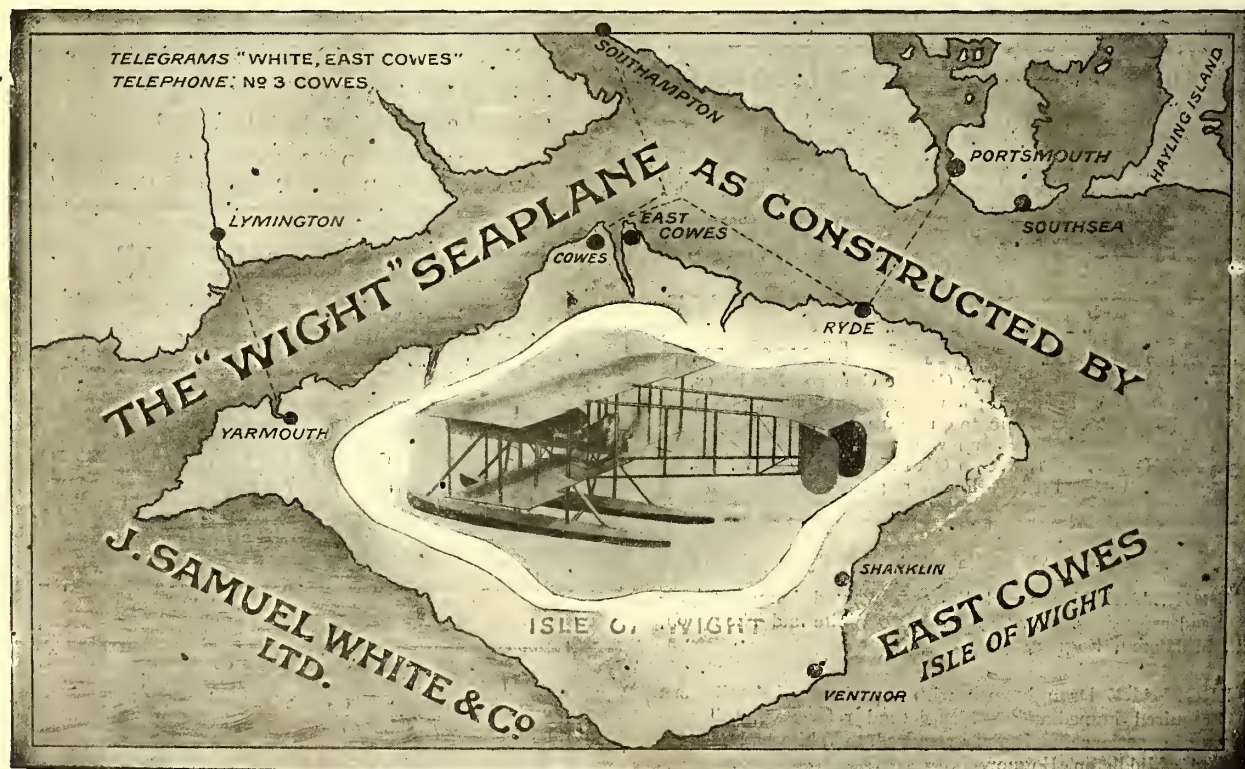
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WEDNESDAY, JANUARY 20, 1915.

No. 3

## SOME NEW PILOTS.



Photographs by F. N. Birkett, Percy Road, Shepherd's Bush, W.

1, Flight Sub-Lieut. Wakeley, R.N. (Grahame-White School); 2, Mr. Roche-Kelly (Instructor at Beatty School); 3, Flight Sub-Lieut. Young, R.N. (G.-W. School); 4, Flight Sub-Lieut. Field, R.N. (G.-W. School); 5, Flight Sub-Lieut. Groves (G.-W. School); 6, Flight Sub-Lieut. Price (G.-W. School); 7, Mr. Ivermee (Caudron School).



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## N E R V E S.

The man who says he is never afraid in an aeroplane is either deliberately telling an untruth or else he is too stupid or too ignorant to realise what constitutes danger. Even the man who does not care whether he is killed or not—for there are plenty of such in the world—feels afraid, not of being killed but of the few minutes' acute discomfort, mental or physical, before he finally goes out. As a rule, the better the flier the more he is liable to feel afraid, for to fly really well one needs an active brain, and an active brain entails an imagination, and imagination is the prime cause of all fear.

Now the one thing that can absolutely conquer fear is nerve, and the one thing that breaks nerve is nerves, for it is one of the peculiarities of our beautiful English language that nerve and nerves are the direct opposite of one another. Some happy men are born without nerves, but, as a rule, absence of nerves is due to lack of imagination, and so the man without nerves is generally too stupid to make either a good flier or a good observer, though he may be quite a useful soldier in the ordinary way.

It was Napoleon, was it not, who said that the English made good soldiers, because they were too stupid to know when they were beaten?

Also, many people do not develop nerves till they have been flying for a considerable time. In the early stages they have absolute confidence in the instructor with whom they go up as passenger, and they have no doubts about the safety of the machine in which they are flying, for they know nothing of construction details, or aerodynamic design, so unduly lightened spars, defective bracing attachments, liability to spin, and the impossibility of getting machines out of certain positions do not trouble them. After they have learned to fly themselves they have complete confidence in their own ability to get out of a tight corner, or, in their natural caution preventing them from getting into one—in both of which they may be perfectly justified—and their happy ignorance about construction and design still prevents them from developing nerves.

Some very fine fliers are constitutionally incapable of understanding construction, or design, or both, and fly with perfect confidence on any aeroplane which the officer in charge of the machines, or even the mechanics, tell them is fit to fly. Within reasonable limits this is really a case in which ignorance is bliss and it is folly to be wise, for when once an aviator begins to question the judgment of those responsible for the condition of his machine his only chance of happiness is to become so wise that he can convince himself that he knows more about construction and design than those whose job it is to work on those subjects and nothing else.

Even when he reaches that stage the man with an imagination is never quite happy, especially on a long flight in calm weather when he has nothing to occupy his attention. One pilot of my acquaintance, who is quite one of the finest fliers in this country, has a habit which is most disconcerting to his passengers, however consoling it may be to him personally. He will fly without a waver for perhaps half an hour, then suddenly the passenger will imagine that a storm

has struck them, for the machine will stand first on one wing-tip and then on the other, then it will dive terrifically, and then it will almost loop the loop. After that it will calm down and fly for another half hour, when the performance will be repeated. After they have landed, and the passenger has remarked on the extraordinary squalls which struck them when over certain places, the pilot will casually explain that he was merely looking round at those intervals to see whether his tail was still there, and was testing the controls to see whether anything was trying to jam.

### The Awakening of Suspicion.

The idea seems sensible, and yet other pilots have argued that it is foolish, because the testing operation may jar something loose, and so long as a machine is flying quietly it is better to let well alone. In fact, the more the budding aviator sees and hears of the methods of different pilots the more he finds their opinions differ, and the less confidence he is inclined to put in anyone else's judgment besides his own. It is at that stage that he begins to hate going up as a passenger, except, perhaps, with one or two pilots, whose methods are similar to his own. Even then, he is not happy, because, being unable to "feel" the machine through the controls, he does not know just why the pilot does certain things. It is exactly the same as the hatred an experienced car driver has of being driven by anyone else. Not having anything to do, one simply sits and thinks of bolts that may shear, and nuts that may fall off, and controls that may stick, and so forth.

When one reaches the stage of having no great confidence in one's pilot, and having still less in the people who built and the mechanics who care for one's machine, one has to be very much of a fatalist if one is to avoid developing nerves.

### "Cold Feet."

That lamentable inclination towards deterioration, which is inherent in even the best of us, has imported into ordinary conversation a multitude of words and phrases which are pure slang. Some of them become "good English" after a period, others do not, but in either event, many slang phrases are exceedingly apt. Among those most commonly used among aviators the expression "cold feet" is particularly useful, for it indicates a state of mind as well as a state of nerves. So useful is it that even the best people in the Royal Flying Corps habitually use it in conversation, though I have not yet heard of it appearing in an official document.

"Cold feet" may lead merely to proper caution, or it may lead to complete loss of nerve. A pilot may have cold feet of a certain machine and so fly it with due respect for its peculiarities, or he may have cold feet of flying altogether, in which case he had better give it up, for, if he does not, he must take to "doping," which is fatal.

A particularly malignant disease is "constructor's cold feet," in which the victim, always on the ground himself, watches every machine in the air in a constant state of terror, expecting it to fall in pieces whenever it is moved by a gust, and when a machine of his own or any other make is on the ground, he is always pawing



round it, finding some spot at which it may break, or something that may come undone, and get mixed up with something else. It is a most unpleasant disease to the sufferer, and I have known designers, constructors, school managers, and other ground-workers at aerodromes to be compelled to take a holiday far away from all flying simply to calm the jumpiness of their nerves. Nevertheless, it is an excellent thing for the pilots, because it results in stronger machines.

As one of our best pilots said some time ago, "It is very easy to be brave in the drawing-office," and if all designers and constructors were compelled to spend a day or two a week on an aerodrome, listening to what people other than their own employees say about their efforts, it would thoroughly infect them with "constructor's cold feet," much to their ultimate advantage.

#### **Pity the Poor Passenger.**

But perhaps the most unpleasant, because the hardest to cure, form of the disease is "passenger's cold feet." It is a trouble from which military—and naval—observers are particularly likely to suffer, especially since so many officers who are not aviators have been attached as observers. This system, which at first seemed sensible enough, was started somewhere about June last, when certain officers were told off for duty at the R.F.C. Concentration Camp on Salisbury Plain in July for a course of training in aerial observation. In fact, it goes back still further, for several Staff College officers, who were blissfully ignorant of everything aviatric, hugely increased the joy of the R.F.C. and a detachment of the R.N.A.S. during the Army Exercise in the Midlands in 1913 by acting as observers.

So long as such an observer knows nothing about aeroplane construction, or the difference between a good and a bad pilot, he is perfectly happy; but he cannot live long among aviators, who are only beaten for talking "shop" in the mess by the Cavalry School, without picking up enough knowledge to make him unhappy, especially because aviators themselves take a grim delight in giving cold feet to others. An observer who is just rigging himself up in nice warm clothes for a long flight is not filled with confidence when a pilot remarks: "Oh! you're going out with So-and-so, are you? Well, if he breaks your neck you might leave me your camera, I rather covet it." That is a fair sample of what the unfortunate passenger has to stand, and though it is said in jest, there is a grim seriousness behind it. Such jokes amply fill the place of the skeleton at ancient Egyptian dinner-parties.

However, after a time, if he is a man of ability, which an observer even more than a pilot should be, the passenger will have picked up enough knowledge to be fairly sure whether his machine is in a fit state to fly or not, and to know whether his pilot can be trusted, so his mind can be at ease on these important points. Also, one may assume that squadron-commanders have by now enough sense not to send any observer up with an untrustworthy pilot. Any squadron-commander who is not sufficiently a judge of other peoples' flying to know that much about his pilots is obviously unfit for his job.

But there is one anxiety which, under war conditions, can never be absent from the passenger's mind—namely, that he has a very poor chance of coming out alive if his pilot is hit. This is a matter which should be put right at once, for it can be put right quite easily.

#### **Dual Control.**

If the observer is himself a pilot the fear of the consequences if the pilot is hit must be even greater than if he cannot fly himself, for, as one soldier put it to me, "a chap would feel such a fool just sitting there and waiting for the crash, but if he had a stick to waggle it would at any rate keep him interested till the end." Which amounts, in effect, to a plea for dual control.

There are, of course, several objections to dual control. In the first place, as ordinarily fitted, the lever, and still more so a wheel, must get in the observer's way and interfere with the placing of map-cases, notebooks, sketching blocks, and the other paraphernalia pertaining to the observer. There is also the objection that if both people want to take control at a critical moment, the machine, being unable to serve two masters, will follow its own course and end in disaster. There is, thirdly, the objection that dual control adds to the weight and is difficult to fit satisfactorily on some machines, though many makers have fitted it neatly. There is, fourthly, the objection that the Royal Aircraft Factory does not like it, and this seems to be the chief reason why the War Office—which still seems afraid to move without the R.A.F.'s permission—does not make dual control a standard on all two-seaters.

Very early in the war, a writer in the *Engineering Supplement* of the "Times," signing himself "Ornis"—a writer who invariably reflects accurately the views of the R.A.F.—published an article condemning and condemning dual control. His arguments were as weak as R.A.F. arguments usually are, and chiefly amounted to objection to the extra weight, which is natural enough when one discovers that a standard B.E.2c. will not pass the climbing tests which are imposed by the Aeronautical Inspection Department on the machines of other firms, and has to be "faked" to do it.

Unfortunately for "Ornis," the official Eye-witness with General Headquarters reported on September 29th how a German observer landed safely with a dead pilot, thanks to dual control, and later it became known that a French observer also saved his life and that of an unconscious pilot—not to mention bringing back the result of their reconnaissance—by means of dual control. Perhaps the most unkind cut arrived when the "Times" Special Correspondent in France, writing immediately after meeting a number of R.F.C. officers, specifically mentioned their advocacy of dual control.

As further proof one may mention the case of Mr. Loraine's wound. He was unconscious when he landed, and would probably have been physically incapable of controlling the machine even before he became unconscious, but fortunately he happened to be the passenger, and the pilot, Mr. Denys Corbett-Wilson, was not hit. Their Blériot had not dual control, so if Mr. Wilson had been hit instead of his passenger both would certainly have been killed. The fact that they were not is a strong argument in favour of dual control.

No doubt the R.A.F. will argue that on an inherently stable aeroplane like the B.E.2c. there is no need for dual control, because if the pilot is hit the machine will not dive or side-slip, but will come down of its own accord, seeing that the passenger can operate the rod leading to the throttle lever, and so can stop the engine, and thus the machine will get down safely, so long as it does not hit a house or a tree, or something else solid, just as it is landing.

That is only partly true, for it assumes that the pilot when hit is going to be so considerate as to let go all the controls and subside in a graceful heap on the floor where he will not interfere with the free flopping about of the control lever and rudder bar. In practice he would probably grip the lever tight in a spasm of pain and either fall forward onto it, causing a series of dives, or fall back and pull it with him, making the machine sit on her tail and stall. When she stalled and subsequently dived he would almost inevitably fall forward into his belt, and push the lever forward. Also his feet might do anything with the rudder bar at the same time, and the result would be as handsome a smash as if inherent stability had never been invented. It would no more save the crew than it saved poor Mr. Busk, when his machine caught fire, so the inherent stability argument may be washed out straight away.

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### A Simple Way Out.

There is, however, quite a simple way out of the difficulty. The passenger's compartment can be fitted with an elevator lever right up against the side like the brake lever of an internally controlled car, and sliding pedals for the rudder control can be fitted wide apart, so that they slide along the sides of the fuselage, where they are not in the way normally, and are easily found when wanted. There need be no lateral control, for a decently stable machine, or an absolutely inherently stable one, does not need it, and, anyhow, quite sufficient lateral control can be had by the rudder alone.

The elevator lever should be long enough and strong enough to overcome the pilot's lever if he happens to fall forward onto it, or grab it hard while unconscious. People who are knocked out do not always collapse with loose muscles, for I have known a man who was blown out of a room into the hall by a gas explosion pick an unconscious woman up off the floor of the hall, carry her out of the front door and lay her carefully on the steps, and remember nothing about it. Hence one reason for the conscious member of the crew to have plenty of leverage.

Also, a long lever means more "travel" than a short one, so if the observer had done no piloting at all he would not be so likely to endanger the pilot's life and

his own by moving the lever too much and so causing a vertical dive or looping the loop.

The whole arrangement need not add more than fifteen or twenty pounds to the weight of a machine, and ought to weigh about ten; it could be fitted in the course of a morning's work to any existing aeroplane by the squadron mechanics; it would not be in the least in the way of the observer's work; there would be practically no danger of the observer himself getting mixed up with these supplementary controls if he were hit and if the pilot were not; and, finally, even if the observer did not manage to save the smash, he would at any rate have had something to keep him amused all the way to the ground, which alone is sufficient to justify such a fitting.

Incidentally, it would be well not to couple the supplementary wires to the pilot's foot-bar and lever, because, quite conceivably, a bullet, or a small shell, might carry away the whole of the pilot's control fittings inside the fuselage without hitting the pilot, and in that case the supplementary controls would save the crew and machine, provided the wires were carried right back to rudder and elevator without connecting to the pilot's wires.

If anyone has any objection, mechanical, theoretical, or military, to such an arrangement I shall be glad to publish it.—C. G. G.

### The New Organisation of the R.F.C.

An Army Order issued on January 17th details the reorganisation of the Military Wing of the Royal Flying Corps. The Corps will be formed into wings, each with its commanding officer, and the post of O.C. Royal Flying Corps, is abolished. Lieutenant-Colonel F. H. Sykes, 15th Hussars, held the latter appointment, and has been gazetted as a General Staff Officer of the First Grade. The Army Order sets out the following points:—

The Royal Flying Corps (Military Wing) will be organised in wings, each under a separate commanding officer and consisting of two, three, or, in special cases, four squadrons.

An additional wing commander, designated the administrative wing commander, will command the Royal Flying Corps depot, and be the officer in charge of Royal Flying Corps records. In war he will also command the reserve aeroplane squadrons and the aircraft park at home.

The appointment of officer commanding the Royal Flying Corps (Military Wing) is abolished.

Provisional establishments for wing headquarters, for the headquarters of the administrative wing, and for the Royal Flying Corps depot are issued.

Wing commanders will be responsible for the training and administration of their wings, including accounting for equipment, clothing, and necessities.

The adjutant will assist the wing commander in all questions of training and discipline.

The equipment officer will assist the wing commander in all questions concerning technical stores; he will account for all technical stores in charge of the wing, making such issues to squadron commanders as may be necessary to maintain the equipment of their squadrons. He will obtain receipts from squadron commanders for all issues, and will grant receipts for all stores returned, but there will be no ledger transactions between squadron commanders and equipment officers.

The administrative wing commander will carry out similar duties as regards the reserve aeroplane squadrons, the Royal Flying Corps depot, and the aircraft park; he will also be responsible for the final approval of all recruits, and for the recruiting of men specially enlisted during war; for the allotment of personnel to squadrons, for the despatch of reinforcements of personnel abroad, and for preparing the monthly statement of allowances and extra pay of all the officers of the Royal Flying Corps.

Personnel will on enlistment be sent to the Royal Flying

Corps depot for training. Here they will be trained not only in the ordinary duties of a soldier, but also in their technical duties as air mechanics in the technical section of the Royal Flying Corps depot. From the depot they will be drafted to wings according to requirements. Training at the depot will normally take six months, but will often be much curtailed during war.

Promotion to the rank of sergeant will be made by wing commanders; promotions above the rank of sergeant will be based on the recommendation of wing commanders and authorised by the officer in charge of records from a general roll of non-commissioned officers kept by him.

	Officers.	Sergts.	Cpls.	Air Mechanics & Privates.	Total.
Wing Headquarters ...	3	6	3	18	30
Administrative Wing...	4	3	11	rank and file	18
Records & Recruiting ..	2	7	civilians	—	9
Depot ...	7	*10	228	rank and file	246

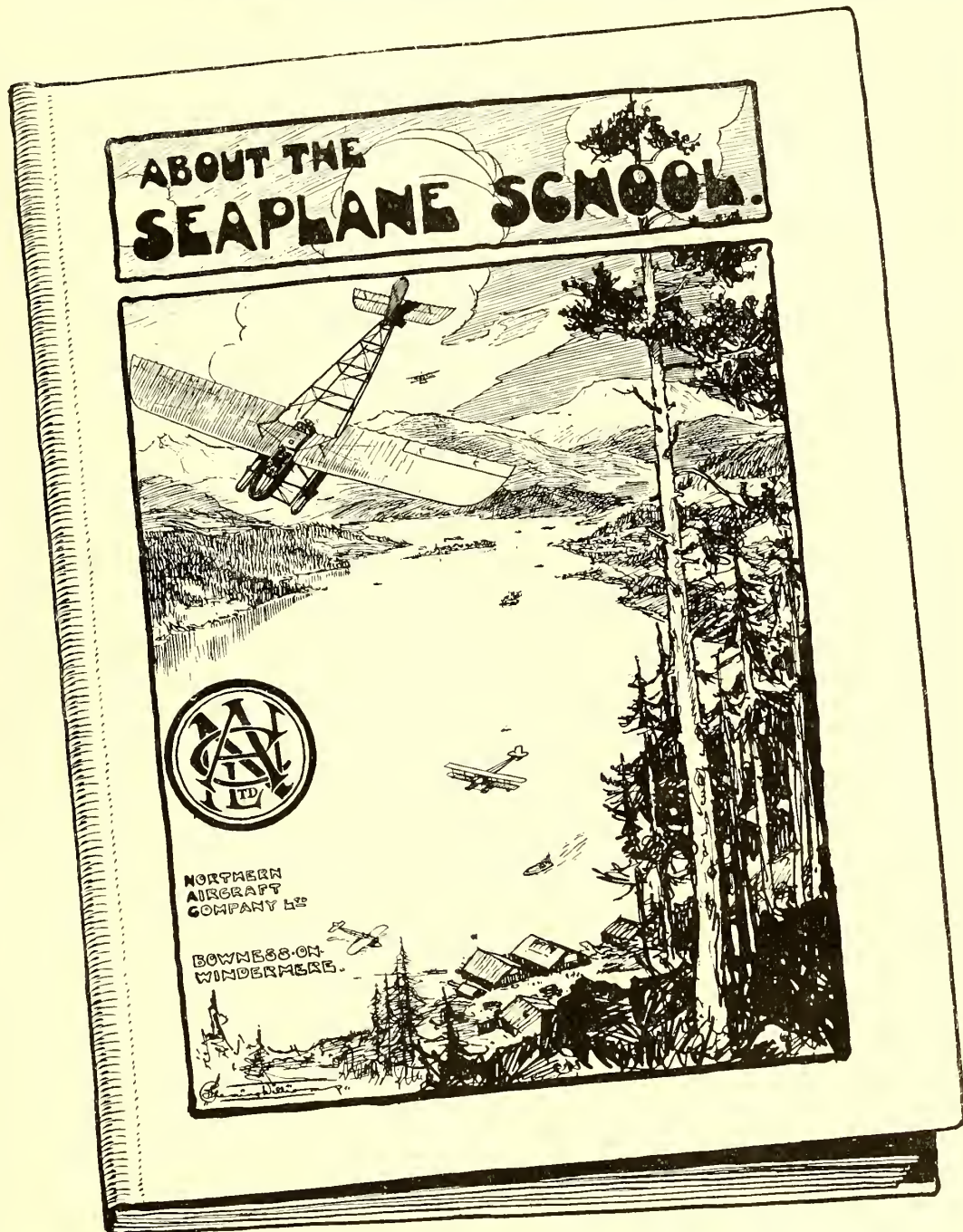
\* And one warrant officer.

[The new scheme confirms the expansion of the R.F.C. in the manner mentioned in this paper some weeks ago, and one can foresee the Corps consisting of fifty or sixty squadrons before many months are past. One cannot, however, quite comprehend the idea of abolishing the post of O.C., R.F.C., unless it is intended that all Wing Commanders shall be directly under the command of the Director-General of Military Aeronautics, in which case one hopes to see General Henderson resume that post. Otherwise lack of uniformity in the training routine of squadrons might easily result. Colonel Sykes, as a General Staff Officer, will doubtless be the representative of the R.F.C. with General Headquarters, for his knowledge of aviation, and the foresight he has shown in the past concerning future developments, obviously make him too valuable for his experience of the subject which he has specialised to be wasted by allowing him to revert to any other arm.—Ed.]

### An Interesting Memento.

Mrs. Rey, a member of the Royal Aero Club, wishes to sell on behalf of the owners, who are in straitened circumstances on account of the war, a letter and a copy of "Le Ballon Poste," which were sent by balloon from Paris during its siege in 1870. This relic of early aeronautical adventure was sent out of Paris during the siege, and its contents are peculiarly interesting in the present state of affairs. Any collector of curios should be glad to pay a good price for it. Offers should be addressed to the Secretary, the Royal Aero Club, 166, Piccadilly, W.

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## Naval and Military Aeronautics.

### GREAT BRITAIN.

From the "London Gazette," January 12th, 1915.

WAR OFFICE, January 12th.

REGULAR FORCES.—Establishments.—Royal Flying Corps (Military Wing).—The undermentioned appointments are made: Flying Officers—Dated December 22, 1914: Lieutenant E. O. Grenfell, 5th Battalion the Duke of Cornwall's Light Infantry; Second Lieutenant Cyril M. Crowe, Special Reserve; and Second Lieutenant Geoffrey H. Eastwood, Special Reserve.

SPECIAL RESERVE OF OFFICERS.—Royal Flying Corps (Military Wing).—Frank Bernard Halford, Aeronautical Inspection Department, to be an Inspector of Aeronautical Material, for employment with the Royal Flying Corps, and is granted the honorary rank of lieutenant whilst so employed. Dated December 18th, 1914.

The undermentioned relinquish their temporary commissions. Dated January 13th, 1915: Roy Holdsworth Dore and James Henry Herbertson.

\* \* \*

A Second Supplement to the "London Gazette" of January 12th, published on January 14th, contains the following military appointment:—

WAR OFFICE, January 14th.

REGULAR FORCES.—The undermentioned non-commissioned officer to be second lieutenant for service in the field:—

INFANTRY.—The Loyal North Lancashire Regiment.—Dated December 17th, 1914: Sergeant Thomas Fawdry, from Royal Flying Corps.

\* \* \*

From the "London Gazette," January 15th, 1915.

WAR OFFICE, January 15th.

SPECIAL RESERVE OF OFFICERS.—Army Service Corps.—Second Lieutenant (on probation) Albert T. Crick, from Royal Flying Corps, Military Wing, to be second lieutenant (on probation). Dated January 16th, 1915.

\* \* \*

A Supplement to the "London Gazette" of January 15th, published on January 16th, contains the following military appointments:—

WAR OFFICE, January 16th.

REGULAR FORCES.—Commands and Staff.—General Staff Officers.—First Grade—Brevet Major (temporary Lieutenant-Colonel) Frederick H. Sykes, 15th (the King's) Hussars (Royal Flying Corps, Military Wing), and to retain his temporary rank. Dated December 21st, 1914.

ESTABLISHMENTS. — The undermentioned appointments are made:—

ROYAL FLYING CORPS (MILITARY WING).—Flying Officer—Lieutenant C. S. Burnett, Reserve of Officers. Dated December 4th, 1914.

SUPPLEMENTARY TO REGULAR UNITS OR CORPS.—Royal Flying Corps (Military Wing).—Robert Orme to be second lieutenant (on probation). Dated January 8th, 1915.

\* \* \*

A Second Supplement to the "London Gazette" of January 16th, published on January 18th, contains the following military appointments:—

WAR OFFICE, January 18th.

His Majesty the King has been graciously pleased to promote by brevet the undermentioned officers:—

To be Lieutenant-Colonels—Major (temporary Lieutenant-Colonel) Hugh Montague Trenchard, C.B., D.S.O., Royal Scots Fusiliers, wing commander, Military Wing, Royal Flying Corps, and Major (temporary Lieutenant-Colonel) William Sefton Brancker, Royal Artillery, Assistant Director of Military Aeronautics, War Office.

REGULAR FORCES.—Establishments.—Royal Flying Corps (Military Wing).—The undermentioned appointment is made: Second Lieutenant Hugh C. Tower, Special Reserve, to be flying officer. Dated October 15th, 1914.

SUPPLEMENTARY TO REGULAR UNITS OR CORPS.—Royal Flying Corps (Military Wing).—The undermentioned second lieutenants

(on probation) are confirmed in their rank: Clifford A. Hooper and Hugh C. Tower.

Leo Francis Page to be second lieutenant (on probation). Dated January 11th, 1915.

### NAVAL.

BUCKINGHAM PALACE, Wednesday, January 13th.

The King held an Investiture at 11 o'clock.

The following were severally introduced into the presence of the Sovereign, when the King invested them with the Insignia of the Division of the Orders into which they have been admitted:—

THE DISTINGUISHED SERVICE ORDER.—Companions—Flight Commander J. T. Babington, R.N.A.S., Flight Lieutenant Sidney Sippe, R.N.A.S.

\* \* \*

The following appointments were made at the Admiralty on January 14th:—

Temporary Surgeons—A. L. Sutcliffe, M.B., and F. J. Humphreys, M.B., to the "Pembroke III," for Royal Naval Air Service, to date January 12th and January 13th respectively; K. Wolferston, to the "Pembroke III," for Eastchurch Air Station.

\* \* \*

The following appointment was made at the Admiralty on January 18th:—

ROYAL MARINES.—Colonel J. R. Oldfield, R.M.L.I. (Reserve list), to the "Pembroke," additional, for special service with the Royal Naval Air Service, to date December 23rd.

\* \* \*

BREESE—BATE.—On January 14th, at St. Mary's, Hendon, George Fred Breese, of the Royal Naval Air Service, to Hilda May, only daughter of O. H. Bate, of Kenilworth, South Africa.

\* \* \*

Apparently German aeroplanes have been very active lately in Northern France, for certain of the Naval Air Service machines which were out on Monday, January 11th, were quite busy fighting German machines in the air. One Naval officer tackled three different Germans in the course of the morning. A Naval machine was out over Ostend dropping bombs on various positions there, and on the railways, and engaged another German machine on the way back. One bomb, at any rate, smashed the railway line. The machine was under heavy fire while operating, and was hit in nine places without either the pilot or the passenger being damaged.

\* \* \*

The following letter, dated January 11th, from a Flight-Lieutenant R.N.A.S. appeared in the "Morning Post" on January 18th, and apparently describes the same incident:—"I must tell you something about the beano we had yesterday. It was a day! Engaged with three Taubes in the morning, and in the afternoon — and I went and dropped eighteen bombs and six grenades over various works and railway at Ostend—with incidentals. Another scrap with a German machine by the way. Hope we tickled them up, and gave them hell at Ostend. We've got 'em scared stiff—absolutely. It's a great game entirely. I hope we get to know what damage we did at Ostend, though I'm afraid it's improbable. I know I got the railway with one bomb—a clinking shot, right in the middle. I tell you, they let us have it, the machine hit in nine places."

\* \* \*

The "Telegraph's" correspondent at Rotterdam wired on January 13th:—"The English Vice-Consul at Ymuiden has, on behalf of the British Government, presented £100 to the crew of the trawler 'Maria von Hattun' in recognition of their having saved Flight Commander Hewlett."

\* \* \*

A torpedo officer, writing home, gives the following account of the Cuxhaven raid, as witnessed from his ship. He says:—

"On Thursday, December 24th, we got under way at 5.30, and, escorted by destroyers, stole silently out of harbour and

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made our way northward. During the forenoon we met three seaplane-carriers, and they fell in with our flotilla. About 10.30 a submarine was sighted, so we opened out, and the — and a destroyer proceeded to attack. It was one of our own, so we proceeded across to the German coast.

"Nothing happened during the night till about 5.30 on Christmas Day, when we lowered hydroplanes (sic), and they all, with the exception of two, made off to Cuxhaven. We then steamed away for a couple of hours. Fifteen minutes after the hydroplanes had gone a Zeppelin and a Taube aeroplane were sighted, so we all got rifles. The Maxim was manned. The anti-aeroplane guns were manned, and we waited for them. The Zeppelin disappeared for a time, but the Taube came on, and finally got overhead. The rifles were going 'crack, crack,' and the steady 'rip, rip, rip,' of the Maxim was heard, together with an occasional bang from the aeroplane gun. He was going very fast, and was such a height that we couldn't hit him. He dropped a bomb, which fell a few yards short of the —.

"We thought we had hit him once, and a cheer rose up. I clapped my hands, and a chief stoker yelled out, 'Good shot! Give him another as he comes down.' But he did not come down—making off as fast as he could. The Zeppelin came in sight again, looking grand with the sun behind, but he was a few miles off.

"The first attack was made at eight o'clock. At nine a.m. the Taube came aloft, attacked one of our submarines, dropping six bombs in succession. The splash caused by them rose about twenty feet. He came over us again, and I managed to get a shot, but missed. When the Zeppelin came within a mile of us we opened fire with shrapnel from our 6-inch guns. The — did the same, but it was too high to be hit, and kept going higher. It was very fine to watch the shrapnel burst in the air just underneath the big airship, and every time one did it always seemed close, and the old 'Zep' mounted higher to get a safer distance from us.

"By the time we had these brushes with the Germans three of our own hydroplanes came back. We picked them up, and waited till noon for the others. As they did not return we gave them up for lost, and left. The Zeppelin kept a few miles in the rear of us, and finally hopped it. News came to us that a submarine had picked up three pilots, with their mechanics, about eight miles from Norderney, an island off the Dutch coast.

"One fellow only was then missing. I don't think they did any damage, as there was a dense fog over the ground they had to attack, and the men didn't see where they were going to. They dropped bombs on a submarine and destroyer, but missed; so, on the whole, we were as successful as the Germans. The enemy dare not send any ships out after us. It would be a case of 'come out and go under,' and they don't like risking it."

\* \* \*

Mr. Justice Madden, sitting at the Four Courts, Dublin, on January 14th, heard an application by Hugh William Armitage Moore, J.P., of Castlewella, Co. Down, for liberty to apply for probate of the will with codicil of Earl Annesley, of Castlewella, Co. Down, dated September 16th, 1909, and to presume the death of the testator. The affidavit set out that after the outbreak of the present war the testator applied for and received a commission as sub-lieutenant in the Royal Naval Volunteer Reserve (Air Department), and left his residence on September 7th, to proceed on active service with the British Expeditionary Force in France and Belgium. He returned home to Castlewella on short leave on November 3rd. He left the following day for England, with the intention of returning to France from England by aeroplane on November 5th. A few days after the testator was officially reported as missing. It appeared that Flight Lieutenant Beevor, R.N., with the testator as passenger, left Eastchurch on machine No. 1,220 at 3.15 p.m. on November 5th en route for Dunkirk, but did not reach their destination. Inquiries were at once made at Dunkirk and Calais, and the coast was searched, but without result. On November 20th testator's wife was officially in-

formed that he must be presumed to be dead. It further appeared that since the last-mentioned date German prisoners reported that in the beginning of November a biplane with two Englishmen was brought down over the German lines near Lille, and that both aviators were killed. The affidavit further referred to letters received from the Royal Naval Flying School at Eastchurch to the effect that at the time of the departure of the aviators the weather conditions were good, and the intention was to proceed to Dover and cross the Channel. Mr. Justice Madden said he had sufficient evidence to say that the testator had died in the service of his country. He referred the question of the granting of probate to the registrar for the present.

[The first reports stated that the machine was shot down at Dixmude, and there appears to be some mystery about how it came to be at Lille. Early reports also stated that the machine was a Sopwith gun-carrier, but it is now stated to have been a Bristol tractor.—Ed.]

\* \* \*

Apropos the recent submarine raid on Dover, the "Central News" correspondent says, "Directly after the guns from the harbour breakwater opened fire a searchlight from an aircraft swept the skies. After half an hour the aircraft disappeared."

[Almost impossibly a light (of sorts) from a seaplane, and more improbably still from a Naval airship, seeing that it was a "dirty night." It was probably a star shell from a howitzer and more probably an ordinary searchlight from the cliffs.—Ed.]

\* \* \*

One is glad to hear that the damage done at the Eastbourne Aerodrome by the gale a week or so ago is not so bad as was originally reported. Sheds No. 1, 2 and 4 were blown down, and three school box-kites belonging to the Eastbourne Aviation Co., together with a brand new Maurice Farman, were involved in the wreck. The latter machine was on its way to France, piloted by an officer of the R.F.C., who came down for shelter just before the rise of the gale.

Various minor damage was done to other of the sheds, but fortunately the workshops stood up to the wind, so that the delivery of the machines which are being built there will not be delayed more than is usual with anything built to R.A.F. design by any contractor. One gathers that the whole plant at the present works is shortly to be moved to a new workshop at the seaplane station. The new shop is 180 ft. by 60 ft., and when fitted out it will make a fine building.

School work has of course been somewhat disorganised, and the Probationary Flt. Sub-Lieuts. in training at Eastbourne have not had any flying since the school machines were destroyed. However, a resident Naval Instructor and an ex-N.C.O. of Marines have now been attached to the school, so they have been kept busy with other branches of their training.

It is a great pity the school should have been deprived of its machines just when everything was progressing so well, and though every effort is being made to get business into working order again, of course school machines are difficult to obtain quickly at the present time, but no doubt a little official help in this direction will expedite matters considerably.

On Tuesday and Wednesday last, Mr. Fowler of the E.A.C. was at Hendon putting a new H. Farman type machine through its tests for the Admiralty.

\* \* \*

The R.N.A.S. Comforts Fund is now reaching quite useful proportions, but good use can be made of any further contributions friends of the Service would like to send. Most generous contributions of garments have been received from Lady Beatrice Pretymann, Captain E. Reeves, R.N., H.M.S. "Liverpool," the Hon. Mrs. Morgan, Lady Lloyd, Mrs. Penny, Lady Peirse (wife of the Commander-in-Chief East India Station), also from the British and Foreign Sailors Society. A useful addition to the stock of garments has been obtained by exchanging khaki garments sent to the R.N.A.S. Comforts Fund for blue ones sent to the R.F.C. Comforts Fund.

Special attention is now being paid to supplying the needs of the R.N.A.S. men on the seaplane-carrying ships, who are

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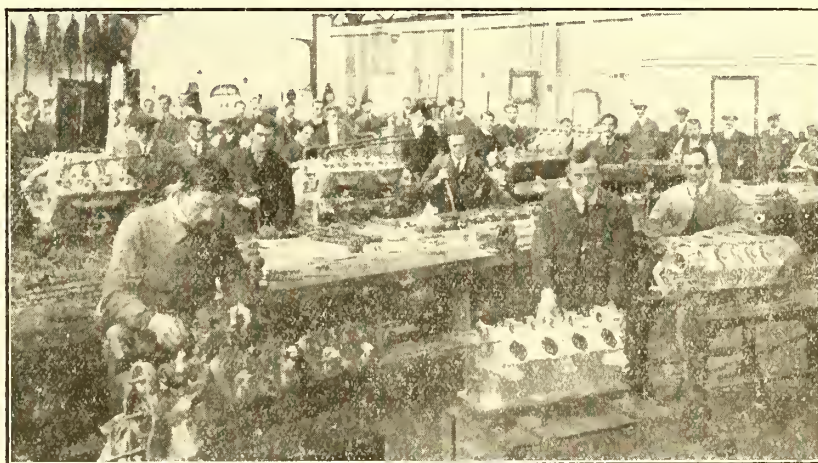
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Further contributions should be sent to Mrs. Sueter, The Howe, Watlington, Oxon.

\* \* \*

From the "Sidney Bulletin" (Australia), October 8th, 1914:—  
"F.I.J.—My old press chum Samson, of Melbourne, is proud of the things his nephew, Commander C. R. Samson, of the British Navy, has been doing. The nephew has charge of the Naval Wing of the Royal Flying Corps. His worst luck is that he is not an Australian, having been born in Manchester 31 years ago. They call him 'the mainspring of the Naval Wing,' but that's nothing to what journalist Samson calls the youngster."

#### MILITARY.

The following passage from the official Eye-witness's report published on January 14th, deals with aircraft:—

During the last few days there has been a considerable amount of wind, especially at high altitudes. This has been felt by the aviators, but has not prevented reconnaissance. On one day it was blowing so hard that an observer engaged in photographing a certain area found himself actually travelling backwards relatively to the ground at the rate of ten miles an hour, though he was on a very fast machine going ahead at full speed through the air.

\* \* \*

The following passage in the descriptive account, which has been communicated by an Eye-Witness present with General Headquarters, continuing and supplementing the narrative published on the 14th inst. of the movements of the British Force and the French armies in immediate touch with it, deals with aircraft:—

It is a truism to say that the introduction of aviation has had a profound effect upon the whole character of military operations. And in no way has it modified war more than by greatly eliminating the element of surprise, for so long as the weather permits of the employment of aerial reconnaissance, it is impossible for any great concentration or movement of troops to be carried out by day within a certain radius without being discovered. Especially in the form of warfare in which both sides are at present engaged is the former function of cavalry as regards reconnaissance usurped by the Flying Corps.

There are, generally speaking, two forms of reconnaissance, whether executed by aviators or cavalry—tactical and strategical. It is difficult to draw a hard and fast line between them or to define exactly where one begins and the other ends, but the former may be said to be undertaken exclusively for the purpose of ascertaining the strength and dispositions of the enemy in a strictly limited area along a battle front, by locating and examining his trenches, gun emplacements, headquarters, reserves, supply parks, and railheads. Its sphere ceases at a comparatively short distance from the front of the opposing forces. All that is going on in the area far behind the enemy's line comes within the sphere of strategical reconnaissance, which is undertaken with the object of obtaining information about the enemy in a particular part of the theatre of war, and so enabling a commander to form an idea as to his opponent's designs.

While tactical reconnaissance is chiefly of value to corps or divisional commanders, to enable them to know what is in their immediate front and to make their local dispositions

accordingly, the higher leading and direction of the large masses—in a word, the plan of campaign framed by a Commander-in-Chief and his General Staff—depend upon the results of strategical reconnaissance.

The intelligence upon which such plans will be based is that referring to the amount of transport and rolling stock on roads and railways, the strength of columns of troops, the size and situation of bivouacs, parks, and supply depots, second lines of defence, and any other facts which may afford a clue to the strength and disposition or movements of an enemy's masses and to his intentions. To gather information of this nature by aerial reconnaissance, the observer either travels above a previously selected line of country or passes to and fro over a certain definite area, noting and recording everything of value that he sees. This latter method is the slower, and is used only when very detailed information is required.

This is not work which can be carried out by everyone. The really first-rate observer must possess extensive military knowledge in order to know what objects to look for and where to look for them; he must have very good eyesight in order to pick them up, and he must have the knack of reading a map quickly, both in order to mark correctly their positions and to find his way. To reconnoitre is not easy even in fine weather, but in driving rain or snow, in a temperature perhaps several degrees below zero or in a gale, when an aeroplane travelling with the wind rocks and sways like a ship in a heavy sea and may attain a speed of 150 mfls an hour, the difficulties are immense. In these circumstances and from the altitude at which it is necessary to fly in order to escape the projectiles of anti-aircraft guns, columns of transport or of men are easily missed. Indeed, at a first attempt an observer will see nothing which is of military value, for it is only after considerable practice that the eye becomes accustomed to scouring a great stretch of country from above and acquires the power of distinguishing objects upon it.

Psychology also comes in, and the temperament of an observer is of the greatest importance. He must be cool and capable of great concentration in order to keep his attention fixed upon his objective in spite of all distractions, such as, for instance, the bursts of shell close to him or the noise of rifle bullets passing through the planes of his machine. He must withstand the temptation to make conjectures or to think that he has seen something when he is not absolutely certain of the fact, since an error in observing or an inaccuracy in reporting may lead to false conclusions and cause infinite harm.

Many men are absolutely unfitted for such duty, and even trained observers vary in their powers of reconnaissance. Some have a special aptitude for strategical work, the wide field of action and the chance of gaining an insight, as it were, into the workings of the enemy's mind appealing to their imagination and to their taste for discovery. The spirit of adventure also enters, for long reconnaissances are hazardous, and before the minds of those carrying them out the prospect of being forced by engine trouble to descend in the enemy's lines cannot but frequently be present.

\* \* \*

Officers of the Royal Flying Corps may be interested to know that a special B.E.2c has been induced by the staff of the Royal Aircraft Factory to attain a speed only four or five miles an hour slower than that of the 80-h.p. Avro. This has, however, only been managed by fitting a reduced form of chassis, consisting practically of two inverted "As," and by making certain alterations in the wiring, the nature of which, being war time, it is perhaps not advisable to mention. The drawback to these alterations in the chassis is that it will necessarily make the machine more liable to turn over on the ground in the hands of the less skilful pilots, and the other alteration involves additional complications for squadron mechanics, and is besides more liable to breakage than the ordinary form of wiring.

In this connection it would be very informative if the makers would find out how much the speed of the standard Avro would be increased by fitting an inverted "A" chassis, and it will be

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interesting to see whether the authorities controlling the Royal Flying Corps will accept B.E. 2cs. with this form of chassis, and bar it on machines built to constructor's own designs.

\* \* \*

It is reported that the death of Captain Lawrence, which was announced recently, was caused by the wings of the 80-h.p. Blériot he was flying collapsing in the air. It appears that the deceased officer had gone up alone to test the machine, intending to do a nose dive, with a specific object in view, and it seems probable that the collapse occurred in the course of such a dive.

\* \* \*

His many friends will rejoice to hear that Mr. Robert Loraine is now sufficiently recovered to be able to take a sea trip with the object of completing his cure. He left Liverpool on the 16th on the Royal Mail Steamer "Alcantara" en route for South America, and expects to be back in six or eight weeks' time, and there seems every prospect of his regaining his former vigour in that period. Considering the nature of his wound his recovery has been wonderfully rapid, and has been largely due to his own strong will.

\* \* \*

Mr. B. C. Hucks, who was recently invalided home with pleurisy, is now out and about again, and has probably returned to duty by the time these notes appear.

\* \* \*

Pté. M. Hart, Royal Flying Corps, wrote recently to his parents at Radhill:—"We are getting plenty of clothes and 'bacca now. We get up football matches in the afternoon and concerts in the evening. Of course, we get our exciting moments, and we are always ready for a visit of a German aeroplane. When one comes over, off goes one of our machines, and then there is an exciting chase. You see a capital fight in the air. You can hear the machine-guns going, but can't tell very well which is getting the better of the encounter until one of them comes down with a devil of a rush. As soon as we sight a German aeroplane we all race away to the alarm post with our rifles and commence firing at it. Then we wait for the bomb and dodge it. Quite an exciting game, and good for the nerves. Up to the present we have had good luck, as not one of the German bombs has dropped near enough to do us any harm."

\* \* \*

It is stated, on quite reliable authority, that there is no truth whatever in the rumour that among other well-known firms who have been invited to tender for B.E. 2cs are Messrs. Swan and Edgar.

#### FRANCE.

The French official communiqué of January 18th says:—

In Champagne German aeroplanes flew over our positions. They were received with cannon and machine-gun fire and two of them came down within our lines in the direction of Bar le Duc. The machines were almost intact. The four aviators were made prisoners.

\* \* \*

New regulations were published on January 17th by the Prefecture of Police enjoining householders to draw their blinds and close their shutters from nightfall till dawn, in view of possible attacks by hostile aircraft. The regulations apply particularly to shop and café windows.

\* \* \*

The following passages in the French official Eye-witness's report, published on January 18th, deal with aircraft:—

From December 30th onwards the enemy did not try any counter-attacks, and we have held since then a large area (more than five kilometres) along the right bank of the Yser. We had then to assure our communications. For that purpose we undertook the construction of a strong bridge, to which the men gave the name of "General Joffre." The German aviators discovered the work at once, and it was, moreover, visible to the German artillery at high tide, but all the enemy's efforts were idle.

On January 11th an Albatros, flying at a height of 2,800 metres, was chased over Arras by one of our aero-

planes, which forced him to return to the German lines. On the night of January 12th-13th an air squadron bombarded the railway station at Noyon, which was brilliantly lighted, and they dropped 14 bombs on it. On January 13th a French aeroplane bombarded the railway track behind Altkirch and Carspach, in Alsace, and the railway station at Remilly-sur-Nied, in Lorraine. On the same day two French aeroplanes gave chase to a German machine which was making for Nancy. A letter from Lorraine confirmed the success of the bombardment of Remilly on December 27th; some soldiers were killed, and the railway line between Remilly and Peaudrecourt was broken up.

Finally, the pilot Gilbert and Lieutenant Puechredon the observer defeated an enemy aeroplane in circumstances well worthy of mention. Gilbert and Puechredon were on January 10th near Chaulnes, on their way back from making a reconnaissance, when they saw an enemy aeroplane making for Amiens. They pursued it, flying high, in order to be able to overtake it without being seen. Not far from Amiens they caught it up and cut it off. The observer fired four shots with his carbine. Two of these hit the enemy observer, Lieutenant von Falkenstein (not Falkenhayn, as was wrongly stated), and the third struck the pilot Keller in the neck, while the fourth pierced the radiator. The wounded pilot brought his machine to the ground, and was at once taken prisoner.

This was the third time that Sergeant Gilbert, who has received the Military Medal, has succeeded in bringing down enemy aircraft. The first time was on November 2nd, during a reconnaissance in company with Captain de Vergnette, "chef d'escadrille," who acted as observer. He gave chase to an aeroplane over the enemy's lines, and after three shots the German machine (owing no doubt to the fact that its pilot was seriously wounded) disappeared, making an exceedingly steep flight, and fell to the ground in a field, where it appeared to be smashed to bits.

\* \* \*

The "Telegraph's" correspondent at Boulogne, cabling on Wednesday, January 13th, says:—"The Abbé Lemire has arranged on several occasions for the throwing by aeroplanes of copies of his paper, the 'Cri de Flandres,' on to Lille, and the parcels were distributed by an inhabitant who picked them up. This continued until the Germans stopped it by confiscating the parcels. The 'Nord Maritime' attempted, a short while after, to have copies thrown from an aeroplane, but the machine was greeted with such a dangerous fire from German machine-guns that the idea had to be abandoned."

[For many weeks past British aviators have been dropping parcels of London and Paris papers on the French and Belgian towns.—Ed.]

\* \* \*

Apropos artillery fire control, the Paris correspondent of the "Morning Post" wrote on January 14th, concerning the Soissons district:—"It is all very well for aeroplanes to detect trenches. We know they are there, dug into a solid chalky subsoil with sides to them like masonry. But from a range of ten miles—over twelve miles with some guns—to drop shells into trenches little more than a yard wide by two deep, accurately and continuously, is well nigh impossible. The doubts may suffer, but the shelters cannot to any effective extent, while, the whole place being mined like an ants' nest, local damage can be rapidly made good, and to blow the entire section of the globe in question into nothingness would involve something still more appalling in the way of gun fire than we have seen even in this appalling war."

\* \* \*

With reference to M. Pourpe's death, a Frenchman who was in the same escadrille writes:—"All that I know about the accident is that they found him dead with his passenger at about ten miles from the place where we are, after two hours' flying over the German lines. I do not believe the story about the side-slipping on a virage, as he was too well accustomed to the parasol now. I would rather believe he was wounded after a fight with a Taube. Some empty cartridge cases found in the fuselage and the rifle which was in the passen-

ger's hands after the accident seem to prove that there had been a 'scrap.' One is glad to think that so fine a flier as poor Marc Pourpe was not killed in a mere aerodrome accident, and one is sure that his British, Egyptian and Soudanese friends will think the same.

\* \* \*

A "Matin" telegram from Auzerre recently recorded the death of the French aviator Lucien Couffin. The military biplane he was flying was caught by a gust of wind and overturned.

\* \* \*

A Voisin biplane with two aviators fell in Paris at the Pont de Grenelle on January 18th, owing to the breaking of the controls. The petrol tank took fire, and the passenger, Captain Chennery, was burned to death. The pilot, named Laporte, had both legs broken, and received internal injuries to which he succumbed in the Boucicaut Hospital.

[It is earnestly to be hoped that this does not refer to Captain Chinnery, R.F.C.—for it is known that British officers have been testing these machines.

The first Voisins of the big type were fairly well made, but one learns that in the later ones, probably owing to pressure for delivery, the workmanship is appalling, and the detail design is distinctly dangerous. In fact, they have been described to the writer as veritable death-traps.—Ed.]

\* \* \*

The semi-official account of President Poincaré's visit to the front, published in Paris on January 13th, says:—"French aeroplanes kept up a continuous flight above the troops to prevent the possibility of any surprise marring the proceedings."

The "Chronicle's" correspondent wired on the 13th:—"All the civil and military authorities had been summoned, although the ceremony was not to take place in Dunkirk itself. It had evidently been thought better not to expose so large a collection of people to the bombs of the Taubes and Aviatiks in one of the open squares of Dunkirk. Yesterday's bombardment of Dunkirk was probably due to an error on the part of the Germans, who had heard of the President's coming, but had chosen the wrong day. Dunkirk is admirably provided with means of defence against aeroplanes. After 8 o'clock no gas lamps are lit, and anybody moving about the streets is arrested."

\* \* \*

The ever original Reuter reported from Paris on January 15th:—"Commander Girod, head of the Parisian Aviation Squadron, this afternoon received at the Palais Bourbon a party of British aviators who had come to confer with him on the subject of the air service."

[Can this be our old friend M. Girod, Deputy for Doubs, the chief agitator in the French Parliament for an adequate air service, a kind of French Joynson-Hicks? If so he may have blossomed forth as a "commandant"—or major—but he is hardly likely to command the Parisian Aviation Squadron, as no force officially so styled is known to exist.—Ed.]

\* \* \*

Mr. H. J. Greenwall of the "Express," wiring from Paris on the 17th concerning the fighting North of Soissons, says that an aviator who flew over the enemy's batteries blew up a train, but was hit on the return journey. His tank was pierced, and he was wounded, but he kept conscious and managed to plane down into the French lines, where he was taken out of the machine insensible. When he recovered he gave valuable information, and the French, knowing themselves to be considerably outnumbered, decided on a retreat.

\* \* \*

Mr. Frederick C. Hild, an American aviator who has been accepted for service by the French Government, has sent some interesting notes to the "Scientific American." His "acceptance" tests were made at Tours first on a 50-h.p. Gnome Blériot and then on an 80-h.p. Gnome R.E.P. On one occasion he had a very narrow escape owing to the pertinacity of another candidate on a Nieuport, who insisted on spiralling at his machine in blissful ignorance of his vicinity. The Nieuport pilot did not discover the Blériot until he was almost on

top of it, and apparently avoided collision by inches. Mr. Hild describes the air shock as violent. The poor Blériot, however, was fated, for another candidate "flew" it next day, and when he had finished with the pieces of it, the authorities discovered he had never been in an aeroplane in his life before, and forthwith sentenced him to thirty days in jail! Mr. Hild eventually secured his military brevet on another 80-h.p. R.E.P., and was then appointed to a Morane-Saulnier escadrille, Blériots, R.E.P.s, Nieuports and Deperdussins having been condemned.

\* \* \*

On January 19th, a report from Berlin via Copenhagen stated that a Zeppelin had passed over Paris on the 18th. Paris apparently omitted to notice this interesting visitor.

#### GERMANY.

It was reported from Berne on January 14th that a new Zeppelin from Friedrichshafen was then undergoing trial above Lake Constance.

Apocryphal the recent raids on Dunkirk and Calais, the "Berliner Allgemeine Zeitung" asserts that London has been visited by the enemy's aircraft. "German air attack against London: Zeppelin and squadron of aircraft over the Thames," attract the attention of this newspaper's readers. The paper says:—"After England has had to experience, through our cruisers and submarines, that though an island she is not by any means safe from attack, she has now to acquire the dangerous knowledge of how German bombs operate. Our aircraft have paid sea-commanding Britannia a visit, and afforded a new and brilliant proof of the bravery of our aeronauts. What we have heard of the appearance of German aircraft over Calais has been in effect that a squadron flew in the direction of Dover."

The Copenhagen correspondent of the "Allgemeine Zeitung" says that a great German squadron of aircraft, at least sixteen strong, during the week-end visited the mouth of the Thames, probably with the intention of attacking London. The weather was, however, so unfavourable that the squadron flew along the coast to Dover, where some bombs were thrown.

The "Berliner Tageblatt" is more cautious and merely says that the squadron reached the Channel, with the intention of proceeding to England, but owing to bad weather had to return in the direction of Dunkirk.

#### BELGIUM.

The "Telegraaf" (Amsterdam) learns from Breda that on Monday afternoon, January 11th, a British aviator threw bombs on the German positions around Antwerp. The effect is not known.

\* \* \*

The "Morning Post" correspondent at Copenhagen reported on January 17th that "The German hydro-aeroplane 'Erna 84' has been washed ashore at Manö, on the west coast of Jutland. The aviators are presumed to have been drowned. On board her were found four grenades. It is stated that the hydro-aeroplane was built in November, 1914."

["Erna" is probably a mistake in transmission for "Ersatz"—or "replacement."—Ed.]

\* \* \*

The "Express" correspondent on the Belgian Frontier reported on January 13th that it is the intention of the Germans in Flanders to develop the aerial phase of the campaign against the Allies' armies. In addition to the base at Ghiselles, other bases are being constructed near Ghent, Namur, and Liège. Elaborate precautions are being taken to protect hangars and petrol bases against bombs, and night signal stations with searchlights are being established.

New terror is added to the already tortured lives of the civilian by night alarms. There was an example of this on the 12th. The inhabitants of the villages between Salzaete, Ghent, and Bruges were suddenly aroused from their beds by the firing of anti-aircraft guns. The frightened population could see the sky streaked with moving bars of light as the men in charge of the aerial defence stations strove to locate what they believed to be hostile aeroplanes. There is nothing to show that there were any of the Allies' aeroplanes aloft over



Flanders that night. The spectacular activity of the enemy may have been due to one of many false alarms which they are continually receiving from the coast.

#### ITALY.

Admiral Garelli has again gone to Venice, placed in command of the Maritime Dépôt of Venice in succession to Admiral Borea.<sup>2</sup> The new Naval Governor took up his command on 11th inst. His appointment at the present juncture, given the position and importance which Venice would acquire in the event of war, is commented on. As Vice-Admiral Garelli, the new Governor will be remembered as a fervent believer in "navy-planes," and a practical exponent of their use. He took part in most of the earlier seaplane flights made from Venice, in which persistent ill-luck made it seem as if the element of his profession were envious of that lighter one which he was temporarily adopting. Anyway, the Italian Aerial Defence League ought to be congratulating itself on having begun the year well with this appointment.

P. 4 now stationed at Campalto and under the command of Lt. Valle (R.E., or is it Nav. Lt. Valli?) has been out getting accustomed to the thick fog over Venice lately. As her motors are not yet silenced properly the people of the Lagoon City were kept on the qui vive during the time that the "invisible" manœuvred over their heads. All good practice for the future!

There would seem to be a very useful concentration of aircraft of all kinds near the Eastern frontiers of Italy. Certain crack aeroplane squadrons, which I noted in your columns as having left their stations near the N. Western boundaries of the Kingdom some time back to fly to Udine, are not reported as having returned to their quarters yet, so possibly they, too, are in the Venetian Province still.—T. S. HARVEY.

#### SWITZERLAND.

The "Express" correspondent at Geneva reported on January 17th that 8 Anglo-French aeroplanes left Belfort that morning "flying in duck formation." The triangle separated above Altkirch. Four of them went towards Colmar and four towards Mulhouse and the Rhine. They returned safely.

The German military authorities are advertising in the Swiss papers for aviators. They are offering high salaries, and their anxiety to get flying men points to the belief that a good many of their aviators have been killed.

#### EGYPT.

Reuter states that the two people concerned in the adventure with a seaplane in the Sinai Peninsula, reported last week, were Captain Sterling—presumably a Captain of Marines, as a Post Captain, R.N., would be unlikely to leave his ship under the circumstances—and Seaman Grall of the French Navy, who was the pilot. They were picked up as related on the beach of the Gulf of Akaba, Captain Sterling after 11 hours' trek, and Grall after being nearly three days without food.

#### U. S. A.

America is the home of great inventions. Reuter's New York correspondent wired on January 15th:—"At a dinner given last night at the Aero Club of America, Government officials announced a plan of the Post Office Department to introduce into the postal service 2,000 aviators, who would carry sacks of first-class mails. The routes have already been picked out by the Department, and it is predicted that the Bill authorising this scheme of aerial transportation of mails will pass next Congress. The Army and Navy schools will train fliers for this service."

[It would be interesting to know what the Government officials really did say, but if there is a substratum of truth in the story one ventures to submit the following verse (more or less to the tune of "John Peel") to commemorate the first aerial postmen, who will doubtless be selected from among America's most trustworthy pilots rather than from among the aerial acrobats:—

"D'ye ken Sam Pierce with his hat so quaint?

"D'ye ken Walter Brock in his new war paint?

"D'ye ken John Cooper, though he's no kind of looper?

"They're all up with the post in the morning."—Ed.]

#### NOTICE TO READERS.

During the past month or two there has been an increasing number of complaints from readers of *THE AEROPLANE* all over the country of the difficulty of obtaining *THE AEROPLANE*, chiefly at railway book-stalls, but also from local newsagents, and in many cases there have also been complaints of late delivery of the paper. This difficulty has been caused to a great extent by the increased demand for the paper, causing the stock of certain newsagents to be sold out, but in other cases it may be caused by the newsagents themselves not realising that *THE AEROPLANE* is in reality the only reliable source of information concerning the doings of the latest type of weapon in the war, and that it should therefore be treated not as a motor paper, whose circulation is likely to decrease owing to the general decrease in the use of private motor-cars, but as a war record of the greatest importance.

If readers who experience difficulty or delay in obtaining the paper will be so good as to write to this office, 166, Piccadilly, W., stating the place where the trouble has occurred and the name of the newsagent, steps will be taken to ensure its punctual delivery in future, for it should always be possible to obtain *THE AEROPLANE* at latest on Thursday mornings with the regular London papers.

#### Zeppelins and the Fleet.

Writing home to his friends in Scotland, a naval engineer, whose letter appears in the "Scotsman" of January 13th, says:—"Since my last letter I have been having a yarn with some of the chaps who had the honour of being tackled by the famous Zeppelins. From all I can hear every man jack of them is convinced that the Kaiser is putting his money on the wrong horse. . . . The opinion of those who have seen the big airships at work, and out with a desire to do damage if they could, is that they will fail every time against a ship of the average liveliness of our own, even on a day that is practically windless, and with a moderate wind above they will fail against anything that can move quicker than an average 'Tramp.' . . . The manœuvring of a Zeppelin, even in an atmosphere of absolute stillness—and when do we get that—seems to be a gloriously ponderous business. And as a sailor how would you steer to keep them manœuvring? Well, that's just how the Zeppelin has not imbued Jack with any terror. In fact, I have not been able to discover that he is worrying in the slightest over the time when he is to tackle the great aerial fleet. If he is worrying at all, it is about not getting the chance to tackle it, and anything else which may come out of the Kaiser's harbours or sheds."

#### The Women's Aerial League.

Miss Campbell Davidson presided on January 18th over a dinner at the Lyceum Club in connection with the Women's Aerial League. Among those present were Sir George Greenhill, the Hon. Lady Shelley, Lady Gomme, Sir James and Lady Frazer, and Mr. Joynson-Hicks, M.P. Mr. Joynson-Hicks, M.P., said that the reason why the Germans had been blocked in their attack on Nieuport was that, owing to the floods, there was only one road, and the Germans were afraid to go on that road in close order because of our flying men and their arrows. We should not escape air raids in this country, but we need not be in a panic, and it would do more to bring about a realisation of the seriousness of the war than anything else. (Cheers.) Sir G. Greenhill, Miss Parbury, and Mrs. Turnbull also addressed the company, Sir George claiming that the Women's Aerial League had done much to make our authorities take up aviation more quickly than they would otherwise have done.

**Aeroplane Design.**

BY F. S. BARNWELL.

[So many new firms are now entering the aeroplane industry, and in consequence so many trained engineers are for the first time taking a serious interest in aeronautical engineering, that the moment seems an opportune one in which to give a general review of the principles of aeroplane design. THE AEROPLANE has been so fortunate as to have obtained permission from Mr. F. S. Barnwell, who until recently held an important position with the British and Colonial Aeroplane Company, Ltd., of Bristol, to publish a treatise read by him lately to the Engineering Society of Glasgow University. Mr. Barnwell is best known as the designer of the highly successful Bristol "tabloid" scout, in which work he had the benefit of the practical experience of the Bristol Co.'s chief pilot, Mr. Harry Busteed—now Flight-Lieut. R.N.A.S. Mr. F. S. Barnwell has himself recently been given a commission in the Royal Flying Corps, and promises to be a pilot of the same class as his brother, Mr. Harold Barnwell, of Vickers Ltd.]

The editor of this paper does not profess to understand Mr. Barnwell's calculations, but as he has proved himself a practical man by turning out one of the best machines in the world, and as he has further shown remarkable ability as a pilot, the editor accepts his figures without question, and presents the first instalment of this important document with complete confidence that it will interest and instruct many engineers who have hitherto regarded aeroplanes merely as haphazard agglomerations of sticks, wire, and canvas, which are propelled by a singularly noisy and unreliable engine and are held together chiefly by hoping for the best. With this slight introduction readers are left to Mr. Barnwell's mercy.—Ed.]

**Preliminary Remarks.**

Before starting on the subject matter of my paper I wish to make some excuses and apologies which I trust you will accept. Aeroplane engineering is a very young science about which many people know very little; even those of us who do think we know something about it do not know nearly as

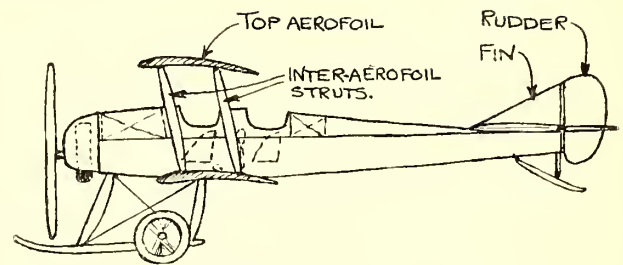


FIG. 2a.

**'TRACTOR' BIPLANE.**

Top Plan approximately same as for Tractor Monoplane.

much as we should like to. So to take a small sub-division of aeroplane design and attempt to deal with it accurately and fully would probably be of less interest than to make a sort of précis of the whole subject.

Hence in this paper I have attempted to deal with a very large subject in a distinctly sketchy manner. Now when one has to be sketchy it is extremely hard to say no more than is necessary, and yet to touch on all necessary points, to be lucid

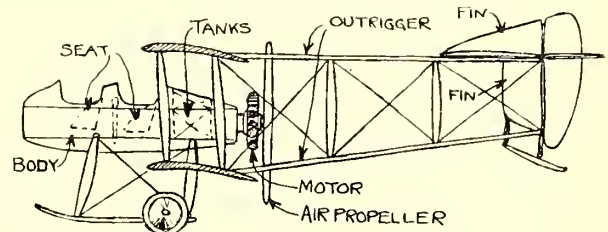


FIG. 3a.

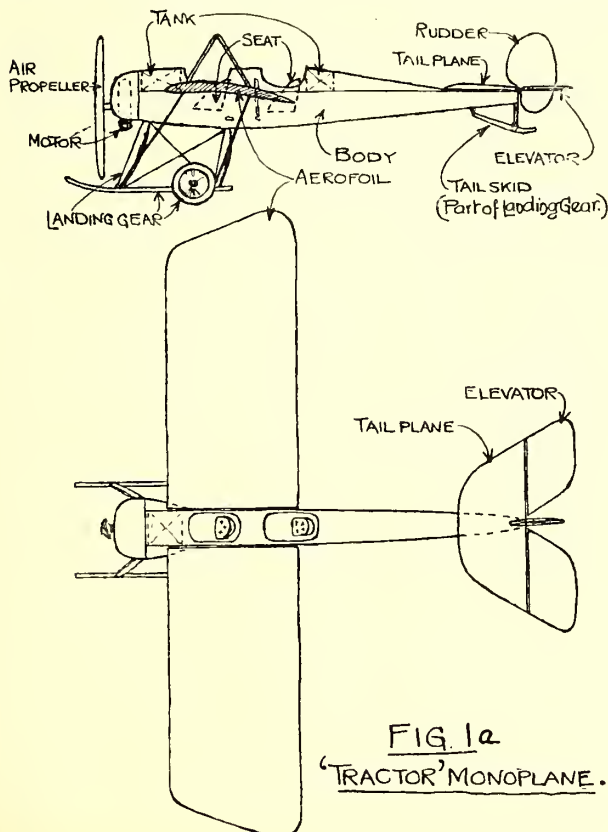
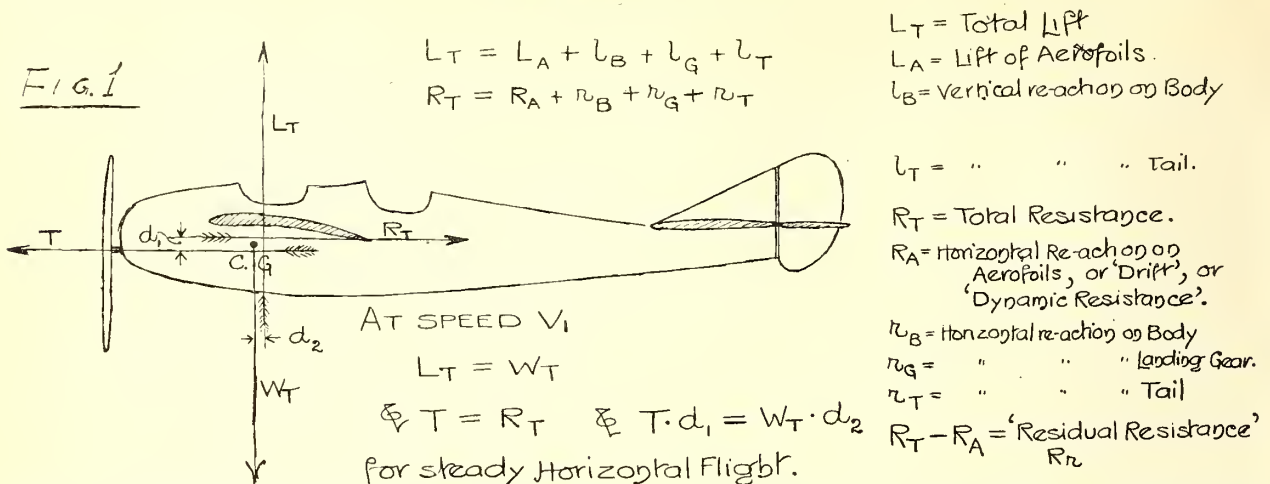
**'PUSHER' BIPLANE.**

FIG. 1a

**'TRACTOR' MONOPLANE.**





and to be academically accurate. It takes as much time trying to work out how to express oneself fully, accurately, and briefly as to plod straight on saying everything one knows, or thinks one knows, about a subject, and, unfortunately, I have not been able to give nearly as much time as I should have liked to the working out, altering and correcting of this paper. Asking your indulgence therefore for what may be obscure, for what may be incorrect, and for what may be tedious, I shall get to the serious business.

I shall start by briefly describing of what we shall consider an aeroplane consists, limiting my description to 3 types (see Figs. (1a), (2a), and (3a).)

An aeroplane we shall consider therefore as a machine consisting of a closed-in body in which is a seat for the pilot and (in machines other than single-seaters) a seat or seats for a passenger or passengers. In this body are also the control mechanisms for the motor and for the movable surfaces of the machine. Mounted in or on this body are the tanks for fuel and lubricant. Mounted on either the fore or aft end of this body is the motor, the only type presently worth considering being the petrol internal combustion. Directly coupled to the motor is an air propeller. Attached to the body are the main lifting surfaces, or, as I shall henceforth call them, "Aerofoils." Attached to the underside of the body is the landing gear. Attached to the rear end of the body is the tail, consisting of a fixed part called the tail plane, and a movable portion (or portions) called the elevator (or elevators); also attached to the rear end of the body are the movable vertical rudder and (if any) a fixed vertical surface or rear fin.

This applies, of course, to the case in which the engine and propeller are fixed to the fore end of the fuselage (as in Figs. 1a and 2a). If (as in Fig. 3a) the engine and propeller are at the rear end of the fuselage, then the tail rudder and fin must be attached to suitable outriggers, which are clear of the propeller disc.

You will note that I have described only the direct-driven "tractor" monoplane and biplane, and the direct-driven "pusher" biplane. I think that at present these three types contain the greatest number of desirable features, and it is not advisable in the scope of this paper to discuss further types, however tempting their points for future development may appear.

It is necessary to consider now the functioning of an aeroplane in the simplest conditions and to arrive at the primary necessities for the machine's fulfilling these conditions. Let us consider an aeroplane of total weight,  $W_T$ , travelling at some uniform velocity  $V_1$ , in a straight line and horizontally (Fig. 4).

The forces acting on this machine are (1) its weight vertically downwards, (2) total "lift" of whole machine vertically upwards (note here that I say advisedly of "whole" machine), (3) thrust of air-propeller in and along direction of flight, (4) total head-resistance of whole machine in and opposite to direction of flight.

For the maintenance of this condition of straight horizontal flight it is obvious that at this speed  $V_1$ , total "lift" of machine must be equal to total weight, and propeller thrust must be equal to total head resistance. Further, if, as is most probable, the line of action of total head resistance does not coincide with that of thrust, then the C.G. (centre of gravity) of the whole machine must be such a distance in front of the line of action of total lift if thrust be below head resistance, or behind if thrust be above head resistance, that the weight-lift couple is equal to, and of opposite sign to, the thrust-head-resistance couple. In an ideal design, thrust, head-resistance, and lift should all pass through the C.G. and generally they do so pretty nearly. But if it be impossible to attain this in a design it is preferable that thrust should be kept as nearly as possible through the C.G., or slightly below it, and head-resistance kept above thrust; but in neither case should the divergence be great.

It is necessary now to consider these four forces in more detail. The total weight,  $W_T$ , for any particular machine is a constant—at least, we may consider it so, since in design one always considers the machine as fully loaded. The total lift,  $L_T$ , is the sum of several forces which all vary according to the attitude of the machine to its flight-path, and which also all vary approximately as the square of the speed. We shall consider it as made up of lift of aerofoils  $L_A$ , vertical reaction on body of machine  $l_B$ , and vertical reaction on tail of machine  $l_T$ . I call it "lift," for aerofoils only, for it may be a downward force on one or other, or both, of the other members.

The thrust of the air propeller  $T$  depends upon the power given to it, upon its efficiency  $E$ , upon its revolutions per second  $r$ , and upon the speed along the flight-path  $v$ . It is matter for discussion later.

The total head-resistance  $R_T$ , we shall consider as the sum of the horizontal reactions upon the aerofoils (which we shall call henceforth "dynamic resistance" or "drift," and denote by  $R_A$ ), upon the body  $r_B$ , upon the landing gear  $r_G$ , and upon the tail  $r_T$ . We shall henceforth call the total head-resistance—the "dynamic head-resistance"—the "residual head-resistance," and denote it by  $R_r$ .

We have noted what kind of machine we have to design and the elementary conditions necessary for it to fly in a straight line; I had better turn now to the consideration of our sources of data for the various members of the machine.

### Motors.

First to consider the motor. This is the most expensive, the most important, and the heaviest single item, and it must be properly mounted, cooled and fed.

The aeroplane designer should prepare a table of motors, as shown in Fig. 2. In the first column we have name and type of motor; in the second b.h.p. at normal full power revs.; in the third, r.p.s. of motor at this power; in the fourth, weight of motor in lbs. complete with carburetter, magneto, piping, etc., also radiator and water (if water cooled); in the fifth,

① NAME & TYPE OF MOTOR	② Full Normal BHP	③ R.P.S. at Full Normal BHP	④ Weight of Motor Complete	⑤ Petrol Cons Galls/ Hour	⑥ Oil Cons /Hour	⑦ Wgt of Mkng. etc	⑧ Wgt of Propeller	⑨ W 2 Hours	⑩ W 4 Hours	⑪ W 6 Hours	⑫ W 8 Hours	⑬ W 10 Hours
50HP Gnome Rotary A.C.	38	20	170	5.0	1.0	50	19	349	459	569	679	789
80HP Gnome Rotary A.C.	68	20	210	7.5	1.7	59	25	464	634	804	974	1144
100HP Gnome Rotary A.C.	95	20	320	10	2	82	29	651	871	1091	1311	1531
80HP Le Rhône Rotary A.C.	85	20	250	8.5	1.8	68	28	536	726	916	1106	1296
70HP Reguair Stationary A.C.	72	30	350	7.0	1.0	54	26	574	718	862	1006	1150
120HP Austro-Daimler Stationary W.C.	125	20	600	9.5	.6	80	34	892	1070	1248	1426	1604
90HP Caproni Upré Stationary W.C.	85	21	450	7.5	.6	66	28	688	832	976	1120	1264
200HP Caproni Upré Stationary W.C.	200	21	900	16	1.0	120	42	1362	1662	1962	2262	2562

TABLE FOR  
MOTOR WEIGHTS.

$$\text{Wgt } \textcircled{7} = \frac{1}{7} \textcircled{4} + 2\sqrt{\textcircled{4}} \text{ in lbs.,}$$

for Rotary

$$= \frac{1}{10} \textcircled{4} + \sqrt{\textcircled{4}}$$

for Stationary.

Wgt  $\textcircled{8}$  = .3 BHP in lbs  
 Wgt Tanks =  $\frac{1}{5}$  wgt contents full.  
 Petrol = 7.2 lbs/gall.  
 Oil = 10 lbs/gall.

FIG. 2.

petrol consumption at full normal power; in the sixth, the same for lubricant; in the seventh, weight of suitable mounting and suitable shields or "cowling"; in the eighth, weight of suitable air propeller with coupling; in the ninth, tenth, eleventh, twelfth and thirteenth columns we have total weight of motor (complete as in col. 4) with mounting, cowling, propeller, petrol, lubricant and tanks, for 2, 4, 6, 8 and 10 hours, running respectively at full normal power.

As to how the figures in this table are obtained. Weight of motor complete is given us by the makers, likewise the power, revs., and petrol and oil consumption. The weight of a suitable mounting is a matter for working from the actual weights of satisfactory mountings for known cases. I have assumed that weight of mounting varies directly as weight of motor, and from such data as I have, have taken it as 1-7th weight of motor for a rotary, and 1-10th weight of motor for a stationary engine.

The weight of "cowling" I have taken as varying as the square root of the weight of the motor, and as equal to twice

square root of weight of motor in lbs. for a rotary, and one-half this weight for a stationary motor.

The weight of tanks I have taken as varying directly as the capacity, and as 1/5th of the weight of the contents (when full, of course), taking petrol as 7.2 lbs. per gallon, and lubricating oil at 10 lbs. per gallon.

The weight of propeller I have taken as varying as the square root of the horse-power and as equal to three times square root horse-power in lbs.

All these weights are fair ones from such data as I have come across. You will understand that they are only approximate, but they are accurate enough for first estimate of weights, and probably err on the safe, that is, the heavy, side.

From this table, then, we can get the total weight of power plant for a considerable number of different powers and for any length of maximum power running between the extreme limits of present requirements.

(To be continued).

### FROM DENMARK.

The Danish correspondent of THE AEROPLANE sends the following interesting notes concerning aviation in the Eastern War area. So far, all we have heard from that side has been the eternal silly bragging of the "Morning Post's" irritating correspondent at Petrograd, according to whom the Russian aviators—who are admittedly very good, even if poorly equipped—dominate the whole atmosphere, as, according to him, the Russian troops dominate the earth. It is, therefore, both refreshing and salutary to have a slightly different, and, certainly, a more technically accurate, description of aeronautical operations on that front. As usual, our correspondent's work is left untouched:—

"Berliner Tageblatt" published some lines of a letter from a flight officer:—"Today I am able for the first time to tell you of my adventures. Our work is quite different from that carried out by our comrades on the western front. While most of their flights are small, we have to carry out special petrol flights of a length of 200 km. to 300 km. Hitherto, we have not seen much of the Russian aviators, and the few ones, which were observed, did not venture to cross the German lines, but watched from the distant, and the Russian flight captain who crossed the frontier by the little west Prussian city Strasburg, had only lost his bearings. All the Russian aviators fly French Nieuport or Farman aeroplanes, and nothing has been seen of the giant Sikorsky biplanes. When we conquered Eydtkuhen again, or more correct in the Russian neighbouring city Kibarty, we found then a number of French aeroplanes and Gnome engines, which had been left by the Russians on their flight.

"Till now I have only once had a fight with a Russian aviator: it was in the morning after the battle of Gumbinnen,

when our troops withdraw in the direction of K—with 8,000 prisoners. I was ordered to find out whether the Russians followed, and then with how big troops. Scarcely had I flown in Eastern direction for one hour, when I observed a Russian aviator on a Nieuport monoplane, who kept to West—and 300 feet below me. He flew straight at my aeroplane, which did not trouble me at least. I rose some hundred feet on my quickrising Taube monoplane, let the Russian pass below and continued to learn how he would behave. Scarcely some kilometers had been covered when my observer told that the Russian aviator had turned too and flew in the same direction as I. So even I turned at once, and now we approached each other, only that I flew again some hundred feet higher than he. Now I flew in the direction of our aerodrome, when we saw that the Russian aviator had turned once more and rising, flew in pursue of us. When 600 feet off him and still 300 feet above I gave my passenger a token to fire, and got pleased to see him grasp the bullet carbine—the revolver could not have covered the distance. Scarcely had lieutenant R—fired, when the Russian turned quick and flew off in the direction of his positions, likely believing us to carry a machine-gun on board. We went in pursue till being above the Russian troops, and in spite of their bullets and shrapnells bursting much lower, we found out the direct number of their troops and the direction of marching. One and a half hour later we reported the exact news of our watching to the headquarter in T—.

"If the Russian aviators have only made few patrol flights hitherto over our troops, the Russian troops try to trouble us, whenever possible. If we arrive above Russians on march, they stop at once, gather and open a heavy fire, which has however caused no losses of men till now. Only two aeroplanes of a slow



rising type were brought down, but both aviators and observers could flee to rescue through the neighbouring woods. But not through fire alone the Russians try to trouble or make our watch impossible; when they had learnt that we used to undertake patrol flights in the mornings and evenings only, they only marched between the hours from 9 to 12 and 2 to 4 o'clock. But we found these facts out quick, and so flew of course just at these times. Then the Russians quite altered their march order, as the luggage was brought forward during the nights, and the troops, leaving the roads, marched through the fields by daytime, which we found out in turn too.

"This morning an officer was sent out on a patrol flight from our aerodrome to watch the Russians approaching in eastern Prussia; he flew deep into the country and reported of a quick approaching division. To learn further details three of my fellows were sent out, but returned without any; they had flown along the roads without seeing men. Then I was ordered to start a patrol flight more than 300 km. in length, to find out whether the advanced division had withdrawn again. Carrying only petrol for 3 hours I determined to economize and not to follow the big roads, but to cut off right angles, and when, about 10 km. off the road I happened to look down through, I saw a village, that had grown quite grey, and descending some hundred meters in spite of the shower of bullets fired at us, we found the village full of soldiers, and even through the field-paths tight snakes of Russian soldiers in grey uniforms massed towards the German frontier. This was the division, which some hours before my fellow had seen advancing on the road to W. And so we found almost always later the Russian troops marching through the field-paths."

A "Feldpostbrief" reports the following adventure of two German flight officers:—"L. and I had been ordered out on a patrol flight above the advancing positions of the Allies in North, and had started on our old brave biplane, which had gone through several adventures already; a thick fog covered the earth so that you almost wanted to cut pieces off with your knife to have a look. Thus we were compelled to fly low, guided by the compass, and when the weather cleared somewhat in half an hour, we descended cautiously from a height of 2,000 metres. True, below there were black stripes and points on the light ground, which must mean troops on the road. I circled wide above the enemy, while L. drew up their positions. They had observed us however, and soon the well-known little white clouds appeared. Only musketry fire! And my observer continued his work without letting himself trouble. Behind a wood we found out several columns. He asked me to descend somewhat to facilitate the observation. Now the left plane is hit by some bullets, and suddenly a dull explosion sound from the petrol reservoir, and before I know the cause, the petrol indicator sinks quick, and pressure gauge rests at 0. 'Alle Wetter'! the petrol tank has got hit, and next moment the turns of the engine slow. But already I have seized the petrol pump and forces fresh air into the tank as quick as possible, to keep the engine running, and thanks to God, the engine recovers. But now we have but to return, and about 50 km. separate us from the aerodrome. Anxious watching the petrol indicator, which reports the loss of the costly fuel, I bank and work the horizontal rudder, and obeying the biplane rises.

"For almost 20 minutes we flew in this way with all nerves strained, when the well-known puff came from the carburetor, the token that there is no more petrol for the engine. Indeed, we hope to have the enemy behind, but still we are not to be denied, being forced to alight amidst a hostile population. Cautious I enter out of the fog cover and descend by a big city. What is to follow? The first curious already appear, making haste and in the distant shouting: 'Vive L'Angleterre.' I have a changing twinkle with L. Evidently they take us for Englishmen, and if we can stand the play of this part, we are able to get off again. So L. commences speaking a broken French, as do the real Englishmen, ordering petrol and a tinker. Soon we have both, and quicker than we could have hoped for, the leak in the petrol tank is soldered, fresh petrol taken in; some Zouaves having shortened our stay, lasting twenty minutes, they help us by the start. And so we could speed off at full turns of the engine, and from the height we dropped a visit-card to the pleasant fellows, with our best thanks for the assistance—but alas! in the German language."



**AXEL, PRINCE OF DENMARK.**—One of the best Scandinavian aviators.

The last lists of the aerial war are reported thus in "Flugsport," December 23rd, 1914:—Casualty list. Feldflieger-department: Captain Geibel, wounded by aeroplane accident; Lieutenant Brock, missing; Sub-lieutenant Brinker, missing; aviator Krebs, wounded; aviator Vizefeldwebel Lucht, wounded.—Hr.

### **The Promised Invasion.**

Sir Cecil Hertslet, the British Consul-General for Belgium, speaking on "The Siege and Fall of Antwerp" at the Æolian Hall, said the airship raid on Antwerp came unexpectedly when the streets were lighted as usual. After that the city was darkened, and when they had another visit from a Zeppelin the airship did not get nearer than the suburbs. Nobody was killed and no houses were destroyed. When so much was said about the darkness of London, it was interesting to know that darkness did have a material effect in reducing damage and loss of life. It had been suggested that it was absurd to darken London, as a Zeppelin could come any moonlight night. But if it could come on a moonlight night it could also come by daylight. The object of a Zeppelin was to come at a moment when it was not likely to be seen. On the second occasion when a Zeppelin was signalled all the searchlights of the forts surrounding Antwerp were thrown on the Zeppelin. They could all see it, but it could not see them.

With this one can cordially agree, as also with the deductions of "C. W." in the "Observer" of Sunday, the 16th, in which he says that if the Zeppelins intend to come they will probably come during this week.

There is a growing moon to guide them at the start and they can arrive in complete darkness. They are more likely to come in a calm, or against a West wind, for in case of disablement of steering gear a West wind would drift them back to Germany, whereas an East wind would drift them farther into England and a North wind to France.

**"Mother."**

An officer of the Garrison Artillery sends to a friend some verses which appeared in a recent number of a publication issued by the Fourth Division called "The Press Bureau." They are dedicated to the 9.2 howitzer, which the soldiers call "Mother," and according to this officer they "laud and somewhat accurately describe some of 'Mother's' exploits." The poem, which is about the best thing of its kind which the war has produced, appeared in the "Morning Post" of January 18th.

A "Bosch" speaks:

"We've had a slight misfortune with a train  
And I think we've every reason to complain,  
It was full of gallant Prussians  
Going to fight the nasty Russians,  
When overhead there sailed an aeroplane.  
Boom!! Mother!!  
We picked up several bits  
Of the late lamented Fritz,  
But we never saw the blooming train again.  
It's really very sad about the town  
Where lived the Heir-Apparent to our Crown;  
It was far from all the stench  
Which arise from dirty trenches,  
And we thought the British aeroplanes were down.  
Boom!! Mother!!!  
We found the Kronprinz' braces,  
But we can't find any traces  
Of that Donner Wetter Blitzen Flemish town.  
We were loading up our celebrated gun  
After firing Black Marias, one by one,  
For after careful searches  
We had found out two more churches,  
When an aeroplane showed black against the sun.  
Boom!! Mother!!!  
And although the Kapten pines  
Still we can't find any signs  
Of our celebrated 'Black Maria' gun."

**A Revised Version.**

The following excellent effort appeared in the "New Witness" on January 14th.

Mr. Charles Strachey, the author, first quotes the alleged "Hymn for Airmen" from the "Times," January 5th, 1915.

**HYMN FOR AIRMEN.**

(Set to Music by Sir Hubert Parry.)

Lord, guard and guide the men who fly  
Through the great spaces of the sky,  
Be with them traversing the air  
In darkening storm or saushine fair.

Thou who dost keep with tender might  
The balanced birds in all their flight,  
Thou of the tempered winds be near,  
That, having Thee, they know no fear.

Control their minds, with instinct fit  
What time, adventuring they quit  
The firm security of land:  
Grant steadfast eye and skilful hand.

Aloft in solitudes of space  
Uphold them with Thy saving Grace,  
O God, protect the men who fly  
Through lonely ways beneath the sky.

M. C. D. H.

He then adds: "The above-quoted Hymn, though admirably suited for performance (if that is the right word) in time of peace seems hardly suitable at the present juncture; and if the petitions it contains were accorded without exception, the result might be most unfortunate. With a view of averting this danger, and in order to bring the work into harmony with existing conditions, I venture to suggest the addition of the following stanzas:—

This prayer, O Lord, of course, applies  
Only to us and our Allies;  
The men upon the other side  
Do *not* "uphold," or "guard," or "guide."

It is not hard, O Lord, to know  
A "Taube" from a "Blériot";  
Should Zeppelins attempt a flight,  
Don't keep them with Thy "tender might."

Don't prosper the aerial work  
Of German, Austrian, or Turk;  
But give the impious fellows fits,  
And smash them into little bits.

CHARLES STRACHEY.

[One cannot imagine a finer way of knocking the bottom out of the appalling mixtures of sloppy sentiment and blasphemy which seem to pass muster in these days for religious poetry.—Ed.]

**To Accelerate the War.**

An officer on active service writes:—"I do hate the cheap papers on the war. . . I am sure this tends to stop recruiting. . . The papers ought to put things as they are, viz., that we are up against a brave, determined, and ferocious enemy, who use their brains and are without any very nice scruples; that it takes the French, Russians and ourselves . . . all our time to match them, and that we want more men, and highly trained men—especially highly trained men—and every ingenious device and method that can be suggested, to defeat them."

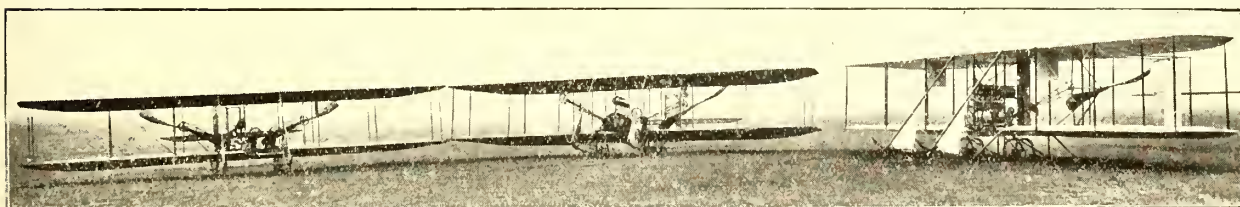
[One device one might suggest to the War Office and Admiralty is the purchase of the most effective aeroplanes only, without troubling about the products of highly paid and ineffective scientists.—Ed.]

**Southampton and District.**

On Thursday a naval aviator flew over the district on a land-going biplane, heading towards Hamble against a terrific wind, flying very high. Once a powerful gust caught it and actually drove it backwards.

On Monday Mr. Mahl tested a new Gnome-engined Sopwith seaplane, another of the successful scouts. This machine put up a good performance, the speed being wonderful for a seaplane. Another Sopwith scout made a good flight on Sunday, and going up Southampton Water it had a cold passage against a strong wind, but when the machine finally turned and proceeded to come back with the wind its speed would have made even Americans admit it was "going some."

On Sunday morning three land-going machines were seen. They were sighted at about two to three thousand feet, all flying against the wind in single file as though one was chasing the other. Finally, two went on northwards and the other returned. This flight excited a great many people who really thought it was a German raider being chased by two British machines, and that probably is the reason why so many rumours are continually being spread about the country of raids.



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### The Sussex County Aero Club.

The War Office has now taken complete possession of the Shoreham Aerodrome, and with it the club premises. Therefore the club, for practical purposes, now ceases to exist. The secretary of the club, Mr. C. Littlewood, has therefore instructed that further copies of THE AEROPLANE are not to be sent to the members. Readers of this paper who are members of the Shoreham Club are invited to become henceforward subscribers on their own account, and thus ensure delivery of the paper to them by first post each Thursday morning, instead of waiting for it until it pleases the local newsagent to deliver it.

### School and Weather Reports.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
Hendon ...	Fine	Wet	Fine	Gale	Gale	Gale	Windy
East Coast ...	Fine	Fine	Wet a.m. Fine p.m.	Dull	Windy	Windy	Windy
South Coast...	Fine	Dull	Dull	Fine	Windy	Windy	Fine
Lake District	Rain	Fine	Rain	Rain	Gale	Gale	Gale

**Hendon.**—AT THE GRAHAME-WHITE SCHOOL.—Instructors: Messrs. Manton, Russell and Winter. Pupils: Prob. Flt. Sub-Lieuts. Wood, Digby, Petter, Hilliard, Reed, Halifax, straights with instrs. Straights alone: Prob. Flt. Sub-Lieuts. Besson and Walmesley. 8's or circs.: Prob. Flt. Sub-Lieuts. Mills,

Driscoll and Besson and Mr. Greenwood. Machines: Four Grahame-White biplanes.

AT THE LONDON AND PROVINCIAL AVIATION Co.'s SCHOOL.—Instructors: W. T. Warren, M. G. Smiles. Pupils doing strts.: Messrs. Laidler, Moore, Collett and Derwin. 8's and circs.: Mr. Abel. Machines: Two L. and P. biplanes.

AT HALL SCHOOL.—Instrts.: Mr. J. H. Rose. Pupils strts., Messrs. Davy (2), Waterson (8), McConnochie (6). Machines: Hall tractor No. 3. New 45 h.p. 2-seater tested by Mr. J. L. Hall on Tuesday, a great success.

AT THE RUFFY SCHOOL.—Instrs.: Messrs. Herbert James and Howard James. Pupils receiving instruction on 60 h.p. dual control machine: Messrs. Grahame, Donald, Marriott. Mr. Aoyang started tuition on 45 h.p. single-seater.

**Bowness-on-Windermere.**—AT THE N.A.C. SCHOOL.—Instructor: Mr. W. Rowland Ding. Pupils with instr.: Mr. R. O. Lashmar (55 min.), Mr. G. S. Railton (15 min.). Machine: N.A.C. propeller biplane. Mr. Lashmar with Mr. Ding purely as passenger making excellent straights. Mr. Ding out on pusher monoplane testing.

### Police and Air Raids.

Instructions have been issued to the Metropolitan Police by the Commissioner as to the measures to be taken by them in the event of an attack on London by hostile aircraft. These instructions, it is stated, are issued for the guidance of the police generally; but the action taken must necessarily be dependent on circumstances.

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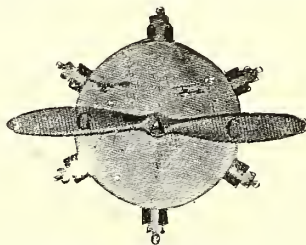
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12  
WEEKLY

*Edited by C. G. GREY. ("Aero-Amateur")*

VOL. VIII. [REGISTERED AT THE G.P.O.  
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No. 4

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## Tales Out of School.

If anyone who knows the Royal Flying Corps were asked to name the Corps' chief characteristic he would probably say it was modesty. The Corps has always hated being advertised, and when well intentioned politicians of feeble understanding babbled about "bands of brave young men" and "our heroic airmen" and suchlike clap-trap, the R.F.C. was moved to a state bordering on physical nausea; in fact, it might reasonably be nicknamed the Anti-Limelight Corps. Unfortunately for its own predilections the work of the Corps brings it continually into the public view. One aviator chasing a Bosche back to his own lines is seen by hundreds of thousands of mud-crushers, and is admired and envied by all of them; a pilot and observer controlling artillery fire obtain, against their will, more publicity than the whole of the carefully concealed battery with which they are working, though probably they would willingly remain as unnoticed as the said gunners—especially when in the vicinity of Archibald, the anti-aircraft gun. In fact, if someone would only invent a practicable "subterranean"—that is to say, a landgoing version of the submarine—one can imagine the R.F.C. volunteering for it as one man.

Talking of subterrains, one of our submarine officers has invented the really great idea for defeating the Boshes. He proposes to produce the super-mole. By a careful selection of parents he intends to breed from the common or cricket-pitch mole progeny of gradually increasing size, till, finally, he arrives at a breed about the size of elephants. Having, in the course of some years, produced a few thousands of these, which will presumably burrow with a velocity commensurate with their size, he proposes to turn them loose, headed towards the German lines, and the British Army, which will by then be numerous and well trained, will march down the burrows behind them. Another sailor solemnly suggests that prior to the attack the super-moles should be starved for six months on German sausages to keep them heading towards Germany, and warns the War Office that troops following them must be equipped with goggles to keep the dust out of their eyes. It needs a sailor to think of all these important details.

However, to return to the R.F.C. Just because the Corps hates being advertised and talked about, I propose to give away some of its doings and happenings. At the same time, it is hoped that these tales out of school may help to entertain the relatives of those members of the R.F.C. who are remiss about writing home. Even if I convey an entirely erroneous impression it may result in some of these defaulters doing their duty to those they have left behind them, for they may write to remove the depressing effects of the tales of their discomforts and perils.

### Impossible Truths.

To start with, it is fairly well known that at the very beginning of the war the Flying Corps saved our Expeditionary Force from being surprised and overwhelmed. I gather that the Germans managed to move two Army Corps something like two hundred miles in three days—or something hitherto considered equally impossible, as about twelve miles a day had

always been considered astonishingly good going. The move was made by motor buses and by the excellent Belgiau railway system—the Belgians having cleverly omitted to blow up the bridges, or to blow down the only tunnel in Belgium—which would have made such an advance impossible. Anyhow, certain R.F.C. pilots and observers, among whom were several who had recently been mere civilians, spotted this move, and duly reported it, only to be flatly disbelieved. However, they stuck to their point, and other more experienced air scouts were sent out to check their observations. When these came back some agreed with the first lot, and some disagreed, so yet others went out on the same errand. By this time the German move was well developed, and easier to read, so the accuracy of the first observations were absolutely confirmed, and precautions taken accordingly.

The same kind of thing repeated itself in a minor degree later on, and so some officers made high reputations as observers, despite their military experience not being great, though one is glad to hear that certain N.C.Os., who were really experienced soldiers, won honours and promotion to commissioned rank by the value of their work as observers. From which one concludes that observers, like poets, are born and not made.

Among those who scored heavily through apparently impossible observations proving correct, was a young officer, who must, of course, remain nameless. He particularly distinguished himself by flying a single-seater, and making his observations and piloting at the same time. He happens to be one of those men who are really safer in the air than on land—judging by his motoring record—and he seems to fly by instinct. He dearly loved that machine of his, and it did excellent service for months, but hard work and exposure told on it, and someone in authority came along who condemned it for its decrepitude to be scrapped, and decreed that he should fly something else. Whereupon he grieved bitterly, saying that he would never do good scouting any more, and would be sure to bring wrong information, and then the Field-Marshal would lose his blessed war—or words to that effect.

### The Psychology of Cold.

Mention of Archibald recalls a vivid description of reconnaissance, during the recent spell of really cold weather, which was given me the other day. Most people who have flown in cold weather know how petrified one can become in even a short journey, and when protected by the warmest clothing and adequate wind shields, but when one has to stay up for two or three hours at a stretch it is correspondingly worse, especially in the older type B.E.2s., which are always draughty. The aviator who told me of his experiences said that after flying for a couple of hours one becomes numbed and feels no actual pain, but simply sinks into a state of abject misery, wondering why the world is so unkind. Then Archibald starts, and the little white puffs of smoke appear all round. The poor pilot feels that this indeed is the limit of unkindness, and, as he put it, one's chief sensation is an impulse to burst into tears. When one is warm and comfortable



one feels annoyed with Archibald or amused at him if he is shooting badly, or one is filled with a fierce intention to drop a bomb on him; but when one is frozen stiff one merely feels miserable, and reproachful, and very much afraid.

One officer, who is certainly one of the bravest men in the Flying Corps, aptly described the observer's work as "hours of indolence punctuated by moments of intense fear"—for, as was mentioned last week, an observer on reconnaissance, unless actually observing, has nothing to do while in the air but think, which is not good for a man with an imagination, especially when over fire, and when on the ground he has no machine to look after and so has plenty of time on his hands.

Incidentally, bravery consists essentially in overcoming fear and doing one's duty in spite of it. The man who is not afraid when in danger is not brave—he is merely a psychological freak. Therefore it is nothing to a man's discredit if he confesses to being afraid; and even the man without nerves, or the fatalist who is quite content to die when his appointed time comes, may be very much afraid without his fear overcoming his effectiveness.

One recalls the old story of the young officer under fire for the first time. An older soldier beside him, noticing his trembling hands, remarked: "I believe you're afraid." To which the youngster replied: "If you were half as much afraid as I am you'd run away."

It is when one comes down from one of these long freezing flights that the real pain starts, for several people have told me that the agony in hands and feet when thawing out is appalling. The pilots suffer worst, for the observer can at least stamp his feet and slap his hands about in the manner of a cabman; but the pilot is fixed with one hand on the control-stick and with his feet on the rudder-bar, and if he tries to swing his free hand he probably pushes the control over in the opposite direction and scares the remaining life out of his slightly less frozen passenger by putting a terrific bank on the machine.

Altogether, an aviator's life on active service has its discomforts, so no one need grudge the R.F.C. their comfortable billets well behind the firing-line, and most of the comforts of a home when off duty.

### Working Under Fire.

Even though the R.F.C. camps and landing-grounds are out of range of German guns, it does happen at times that advanced landing-grounds come under gunfire. In one instance, at least, a party of R.F.C. mechanics had a most uncomfortable time while dismantling a damaged machine at one of these grounds. The rest of the aeroplanes working from that point had flown back to Headquarters, and these men, with an officer or two in charge, were left to bring the derelict home by road. They had just got to work when a German aeroplane came over and dropped a couple of bombs. Then the German heavy guns started "searching" the field, apparently firing by the map. Shells dropped all over the place, one bursting right in front of the machine and covering it and the working party with dirt.

Finally they got the machine hitched to a tender and sent off, some of the men staying to load up remaining stores and odd things on a lorry. The lorry got safely out of the field and then proceeded to side-slip into a ditch, where it barely escaped turning over. Consequently, it had to be unloaded to get it back onto the road. By this time the Germans had lost interest in the landing-ground and began shelling a field alongside the road. Every time the screech of a shell was heard the men working at the side of the wagon next the field remembered something very important they had to do at the side next the road, till the shell burst—which seems a sensible idea. At

length the lorry was lugged back onto the road by another car which had come to look for it, and was re-loaded and the two started off. They had barely gone a hundred yards when a shell landed on the road exactly where the lorry had been standing. After which the journey home became a kind of Thanksgiving Service.

### An Indirect Hit.

Occasionally even being under shell-fire has its humours. At another of the advanced landing-grounds a machine had just come down and the officers had just got out when a big shell dropped in quite near it, digging a huge hole. An enormous clod of earth hit the pilot on the back of the neck, as he said, nearly pushing his head off. For several minutes he danced round, holding the back of his head with his hands and expressing his opinion of Germans and German artillery with his accustomed fluency.

One of his sergeants rushed off to the Squadron Commander and announced with a somewhat alarmed face: "Captain Blank has been hit by a shell, sir!" The Squadron Commander, of course, inquired anxiously whether he was dead—for if a shell really hits anyone there is little chance of his escaping with a wound—whereon the sergeant replied: "No, sir! But he's awful angry."

### Unexpected Altitude.

Another specimen of landing-ground humour—intentional, this time—is worth telling. A certain officer, who was booked for reconnaissance one morning, went out before breakfast to see whether his machine was ready. Presently he came back to his billet and said solemnly to his Flight Commander: "There's been a horrid tragedy! I can't get into my machine this morning." "Why? What's the matter?" asked the Flight Commander. "Well," replied the other, "the aneroid says that it's a hundred feet up in the air." What had happened was that the atmospheric pressure had changed during the night, and the needle of the aneroid had adjusted itself accordingly.

It was probably the same officer who went up to the landing-ground one wet morning when the squadron mechanical transport was getting ready to move, and found the men laying out alongside the cars the non-skid chains which are fitted round the tyres when the cars have to move on soft ground. After seriously contemplating the long lines of bright chains, he turned to the officer in charge of transport and said: "Are you expecting many German prisoners to-day?"

### A Public Entertainer.

Another story, which has nothing to do with aviation, beyond the fact that it was told me by an aviator, seems worth perpetuating. A young cavalry officer billeted in a town near the firing-line became rather tired of going about on a woolly horse, and greatly desired a car so that he might extend his radius of action. After nosing about a bit he discovered the deserted chassis of a big Delaunay-Belleville. Being something of a mechanic he persuaded it to run quite decently, but found a soap-box body a trifle uncomfortable in the weather which then afflicted the Army. He was not entitled to the use of a car at all, but he managed to persuade one of the roadside military workshops to rig him up a totally-enclosed body, made of rough, unpainted planks, with a pent-house roof, so that it looked like a cross between a Noah's Ark and a rabbit-hutch. It had a door in front and a little window at one side, and he was mighty pleased with his "limousine à conduite intérieure," despite the fact that everyone called it "the bathing machine."

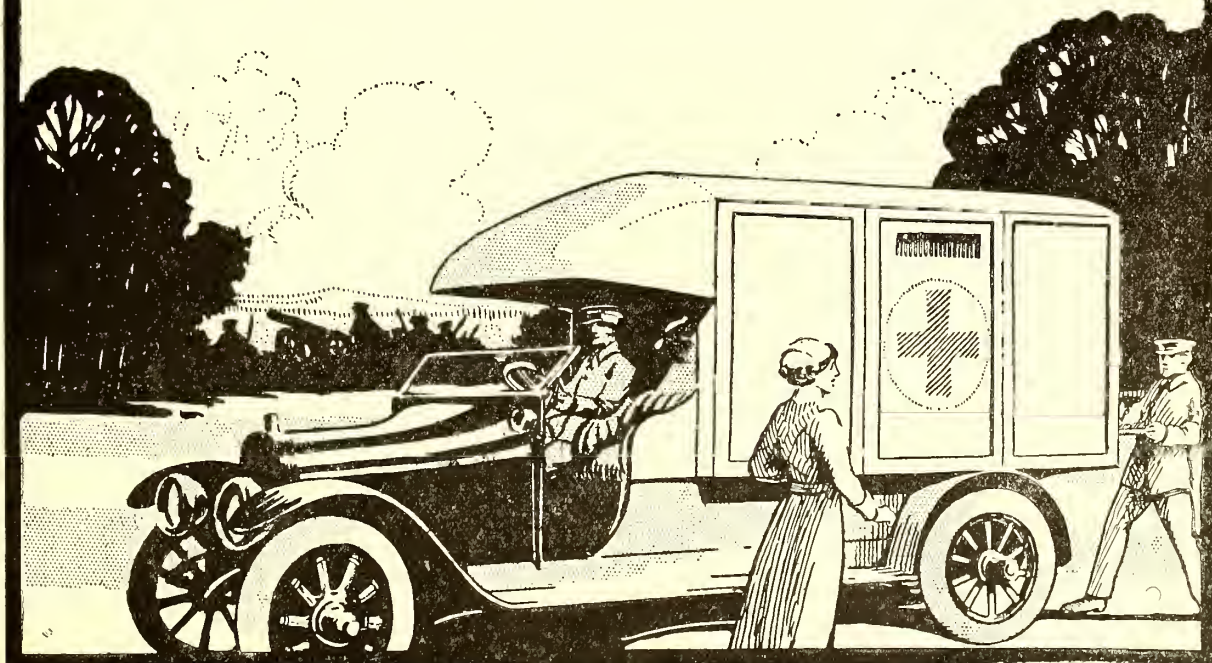
Then one fatal day he resolved to go to the town where General Headquarters are situated, to do some shopping. He started off gaily, happily oblivious of the fact that, just as he was leaving, some wag had

# The wounded

Never in history has better or more skilful attention been given to the wounded than during the present great war, and the petrol-driven motor ambulance and hospital have given invaluable aid in the great work of mercy. Throughout the war-swept area red-cross conveyances of the allied forces are run upon

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and can therefore be thoroughly depended upon. It is well to remember when purchasing petrol to say 'Shell' and insist upon it. It is supplied for all the services of the allied forces only and is obtainable everywhere.



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hung on the back of his "limousine" a notice which ran as follows:—

"Bathing in the Yser Canal! Towel and Drawers, 6d. Apply at the Window."

All went well till he arrived in the main square of the town which was his destination. There he was hung up by a column on the march and brought to a standstill. Immediately his little window was besieged by soldiers of all sorts, who thrust grimy hands through it and demanded value for sixpence, "as advertised."

He was just beginning to wonder what had started the jest when an infuriated tin-hatted Staff officer rode up and demanded to know what the flaming Hades he meant by making a clown of himself right in front of General Headquarters. Only then did he discover the existence of the offending placard, and, unfortunately, history neglects to record what happened afterwards.

The pains and perils of the R.F.C. officers are

### **The Flying Services Fund.**

The Lords Commissioners of the Admiralty and the Army Council having signified their approval, the Royal Aero Club has instituted and will administer a fund, originated by M. André Michelin, for the benefit of officers and men of the Royal Naval Air Service and the Royal Flying Corps who are incapacitated on active service, and for the widows and dependents of those who are killed.

The fund is intended for the benefit of all ranks, but especially for petty officers, non-commissioned officers and men.

In view of the great utility of the work of the Flying Services, evidence of which has been repeatedly given in the official despatches of the Commander-in-Chief, the skilful and daring flights into enemy country, and the protection afforded by the continuous patrolling of our coast by aircraft, it is confidently expected that the British public will welcome this opportunity of showing their appreciation by subscribing promptly and liberally to the fund.

The Right Hon. Lord Kinnaird has kindly consented to act as Honorary Treasurer to the Fund.

Subscriptions should be forwarded to The Flying Services Fund, The Royal Aero Club, 166, Piccadilly, London, W., or to Barclay and Co., Ltd., 1, Pall Mall East, London, S.W. Cheques should be crossed "Barclay and Co., Ltd."

TULLIBARDINE, Brig.-General,  
Chairman of the Royal Aero Club.

The fund has been started with the following subscriptions: M. André Michelin, Chairman of the Michelin Tyre Co., £1,000; The Royal Aero Club, £1,000; Flight-Lieut. F. K. McClean, R.N.A.S., £1,000; Mr. T. O. M. Sopwith, £1,000; Mr. Alec Ogilvie, £250; Mr. Griffith Brewer, £100; Mr. Norman Clark Neill, £100; Mr. Paris Singer, £100; Mr. A. Mortimer Singer, £100; Mr. James Radley, £25; Captain W. Oswald Watt, £20; Editor of "Flight," £10 10s.; Mr. A. J. A. Wallace Barr, £5 5s.; Flight Lieut. N. Pemberton Billing, £5; Mr. J. K. Burbridge, £5; Mr. E. H. Coles, £5; Mr. Oscar Coles, £5; Mr. C. G. Grey, £5; Mr. C. G. Grunhold, £5; Mr. J. E. Pearce, £5; Mr. Arthur Sykes, £1 1s.

Thus the Fund starts with the sum of £4,746 16s. before appealing to the public at all. It is earnestly hoped that every reader of this paper will send a contribution, no matter how small, though the larger the better, to mark his or her appreciation of the magnificent work done by the Flying Services.—C. G. G.

### **The R.N.A.S. Comforts Fund.**

Articles of clothing of all kinds for the men of the Royal Naval Air Service continue to arrive in goodly numbers, but the garments which are really most needed are socks, shirts, cardigans and woollen pants and vests. These are particularly needed for the equipment of the seaplane-carrying ships, which have already done so much good work at sea.

Mufflers, mittens and body belts, being simpler to make, are naturally sent in larger proportions. Five shillings ac-

apparently not confined to German guns and aeroplanes, for I heard recently that on Christmas Eve some of them were awakened from well-deserved slumbers by strange noises outside their quarters. On looking cautiously out of the window they discovered several curious beings with black faces wrapped in wool and furs, and, as one officer described them, "looking like nigger Esquimaux." Further investigations proved that they were not midnight assassins, but some N.C.Os. and men of the R.F.C. who were combining the parts of nigger-minstrels and carol-singers, and were out serenading their officers. Naturally, the shock to the nerves of the aviators was severe, but apparently the officers were of a forgiving nature and entertained their assailants hospitably.

Doubtless I shall be told in due course that I am grossly misrepresenting the R.F.C. and all its works, but, as a general rule, where newspaper people are concerned, the R.F.C. is about as grateful as a Belgian refugee in a Belgravian mansion, so virtue will have to be its own reward.—C. G. G.

knowledge to the Caporal-Aviateur Louis Noël should have read M. L. Noël, Nancy, who does not happen to be any relation of the aviator Noël.

The following cash contributions have been received:—Mr. J. E. Hutton, £5; Mr. James Clarke, £2; Mr. and Mrs. Wade, £1; Mann & Grimmer (Employees, 12th contribution), 15s.; Vickers Ltd., Erith (Aero Woodworkers, 5th contribution), 6s.; total for week £9 1s.; total to date £659 12s. 6d.

Contributions, in cash and kind, should be sent to Mrs. Sueter, The Howe, Howe Hill, Watlington, Oxon.

### **Joining the Flying Services.**

Judging from the number of letters received every day at this office from those desirous of joining the Royal Naval Air Service or the Royal Flying Corps, the following information may save many readers some correspondence:—

Those wishing to join the Royal Naval Air Service should write to the Director of the Air Department, The Admiralty, Whitehall, S.W., stating their age, place of education (if any), and asking for the proper forms of application to fill up. Those wishing to enlist on the lower deck should write to the Central Air Office, Sheerness Dockyard, stating their qualifications as mechanics.

Those wishing to apply for commissions in the Royal Flying Corps should write to the Director of Military Aeronautics, The War Office, Whitehall, S.W., stating their qualifications for a commission, as above, and applying for the necessary forms. Those wishing to enlist in the ranks of the Royal Flying Corps should write to the Officer Commanding, Royal Flying Corps Depot, South Farnborough, Hants.

In the majority of cases applicants are liable to receive replies in due course.

### **The First Suggested Air Raid.**

The following letter to the "Morning Post" is apposite:—

Sir,—The following may be of interest at present:—

A French inventor (M. Campenas) in the year 1796 wrote to Napoleon offering to construct an airship capable of sailing in any direction and carrying a crew of 200 men. His letter to the Emperor runs:

I myself will be your pilot. You can thus without any danger hover above the fleets of enemies jealous of our happiness, and thunder against them like a new Jupiter merely by throwing perpendicularly downwards firebrands made of a substance which will kindle only by the contact and percussion at the end of its fall, but which it will be impossible to extinguish. Or perhaps you will think it more prudent to begin at once by forcing the British Cabinet to capitulate, which you may easily do, as you have it in your power to set fire to the City of London or to any of the maritime towns of England. The airship would be capable of travelling from Paris to London, destroying London, and returning to Paris within 24 hours.

—Yours, &c.,

J. H. PATTERSON.

January 19th.

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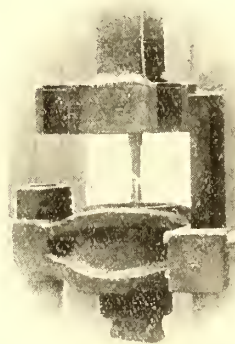
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## Naval and Military Aeronautics.

### GREAT BRITAIN.

From the "London Gazette," January 19th, 1915.

WAR OFFICE, January 19th.

SUPPLEMENTARY TO REGULAR UNITS OR CORPS.—Royal Flying Corps (Military Wing).—Second Lieutenant (on probation) John T. C. Moore-Brabazon is confirmed in his rank.

The undermentioned to be second lieutenants (on probation). Dated January 11th, 1915: Herbert Prinsep Somers Clogstoun and Maurice Leigh Gardner.

\* \* \*

A Supplement to the "London Gazette" of January 19th, published on January 20th, contains the following military appointment:—

WAR OFFICE, January 20th.

SUPPLEMENTARY TO REGULAR UNITS OR CORPS.—Royal Flying Corps (Military Wing).—Lieut. James Valentine to be temporary captain. Dated October 1st, 1914.

\* \* \*

A Second Supplement to the "London Gazette" of January 19th, published on January 21st, contains the following military appointments:—

WAR OFFICE, January 21st.

REGULAR FORCES.—Establishments.—Royal Flying Corps (Military Wing).—The undermentioned temporary appointment is made:—

Squadron Commander—Captain Duncan Le G. Pitcher, 39th King George's Own Central India Horse, Indian Army, from an instructor, Central Flying School, and to be temporary major. Dated January 22nd, 1915.

MEMORANDA.—Captain Herbert R. P. Reynolds, Royal Engineers, employed with the military wing, Royal Flying Corps, to be brevet major. Dated October 30th, 1914.

\* \* \*

From the "London Gazette," January 22nd, 1915.

WAR OFFICE, January 22nd.

REGULAR FORCES.—Establishments.—Royal Flying Corps (Military Wing).—The undermentioned appointment is made: Flying Officer—Second Lieutenant Clifford A. Hooper, Special Reserve. Dated December 18th, 1914.

SPECIAL RESERVE OF OFFICERS.—Royal Flying Corps (Military Wing).—The appointment of Second Lieutenant (on probation) Alfred Huggins is antedated to December 2nd, 1914.

SUPPLEMENTARY TO REGULAR UNITS OR CORPS.—Royal Flying Corps (Military Wing).—Second Lieutenant (on probation) Malcolm McB. Bell-Irving is confirmed in his rank.

The undermentioned to be second lieutenants (on probation). Dated January 15th, 1915: Ralph Christopher Freeman and Melville Richard Howell Agnew Allen.

\* \* \*

A Supplement to the "London Gazette" of January 22nd, published on January 23rd, contains the following military appointment:—

WAR OFFICE, January 23rd.

REGULAR FORCES.—Establishments.—Royal Flying Corps (Military Wing).—The undermentioned appointment to be made:—

Flying Officer—Second Lieutenant John T. C. Moore-Brabazon, Special Reserve. Dated December 2nd, 1914.

\* \* \*

A Second Supplement to the "London Gazette" of January 22nd, published on January 25th, contains the following military appointment:—

WAR OFFICE, January 25th.

REGULAR FORCES.—The undermentioned warrant officer to be second lieutenant for service in the field:—

ROYAL REGIMENT OF ARTILLERY.—Dated December 3rd, 1914: Sergeant-Major Norman Goldsmith, from the Royal Flying Corps, and is seconded for service with that unit, instead of as notified in the "Gazette" of January 4th, 1915.

### NAVAL.

The following appointment was made at the Admiralty on January 21st:—

ROYAL NAVAL AIR SERVICE.—Mr. B. H. Mulock has been entered as probationary flight sub-lieutenant, for temporary service, and appointed to the "Pembroke III," for course of instruction at Eastchurch Naval Air Station, with seniority, January 20th.

\* \* \*

The Secretary of the Admiralty makes the following announcement:—

On Friday, the 22nd, twelve or thirteen German aeroplanes appeared over Dunkirk at 11.30 a.m. and dropped bombs.

No particular damage was done, except that a shed in the docks was set on fire. One of the bombs fell just outside the United States Consulate, breaking all the windows and smashing the furniture.

Belgian, French and British naval and military airmen engaged the German aeroplanes, one of which was brought down by a British military machine just over the Belgian frontier. The German aeroplane, pilot, and passenger were captured.

During the day visits were paid to Zeebrugge by Squadron Commander Richard B. Davies and Flight Lieutenant Richard Peirse. Twenty-seven bombs were dropped on two submarines and on the guns on the mole.

It is believed that one submarine was damaged considerably, and that many casualties were caused amongst the guns' crews.

In making a reconnoitring flight before this attack Squadron Commander Davies was on one occasion surrounded by seven German aeroplanes, but managed to elude them. He was slightly wounded in the thigh on his way to Zeebrugge, but continued his flight, accomplished his mission, and is now progressing satisfactorily.

\* \* \*

The marriage of Flight Lieutenant J. P. Wilson, R.N. Air Service, and Miss Harrison-Broadley will take place at St. Helen's Church, Welton, on Saturday, February 6th, very quietly, owing to the recent death of the bride's father.

### MILITARY.

The following passages in the descriptive account, which has been communicated by an eye-witness present with General Headquarters, continuing and supplementing the narrative published on the 18th inst. of the movements of the British Force and the French armies in immediate touch with it, deal with aircraft:—

January 19th, 1915.

On Saturday the weather continued dry and windy, and consequently the conditions in the trenches somewhat improved. In spite of a wind which, at an elevation of 3,000 feet, was blowing at nearly ninety miles an hour, successful flights were accomplished by our aeroplanes.

An example of the kind of story being circulated in Germany as to our treatment of our prisoners is an article in the evening edition of the "Frankfurter Zeitung," dated December 18th, 1914. In this—which purports to be an "official" report—is given a deposition made by one Volunteer Erich Callies. It is to the effect that he was captured by an English outpost and kept tied to a tree for some hours; that he was several times forced to ascend in an aeroplane in his shirt-sleeves in order to point out the positions of the German troops, name the units holding them, and drop bombs upon them. According to his statement, he had to submit to many interrogations, and was repeatedly struck on the face if he did not answer. He finally made his escape, but became very ill from the effects of this inhuman treatment.

This deposition is supposed to have been made under oath in hospital at Leipzig-Plagwitz on November 28th, 1914, and it is signed by Callies and two officials in whose presence it was made.

It is hardly necessary to state that the whole story is a pure fabrication. Reference is only made to it because it is a somewhat glaring instance of the nonsense that is being

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published. Presumably it would not have appeared in print unless it were likely to be accepted in Germany as being true, and possibly believed in some neutral countries, where public opinion might be biased against the British.

Apart from any other consideration, the absurdity of taking up in an aeroplane a private soldier who had presumably never before made an ascent, in order to ascertain the position of units of which he could have known nothing, is of itself a sufficient refutation of the story. And even if we had been guilty of this folly, we should hardly have rendered the task of the man more difficult by inflicting needless hardship upon him. The publication of this farrago in a presumably reputable newspaper betrays an astonishing credulity on the part of those responsible, or else intense malice and a desire to trade on the credulity of others.

[It will be remembered that reference has already been made in this paper to this story.—Ed.]

\* \* \*

The following obituary notice appeared in the "Morning Post" on January 20th, and confirmed the fear expressed in this paper last week that Captain Chinnery was the victim of the accident to M. Delaporte's Voisin biplane on the 18th:—

**CHINNERY.**—On January 18th, killed as passenger in an aeroplane, near Issy, Capt. Esmé Fairfax Chinnery, Coldstream Guards and Royal Flying Corps, son of the late Walter Moresby Chinnery, Hatchford Park, Cobham, and elder and only surviving son of Mrs. Christopher Stone, Field Place, Horsham, aged twenty-eight.

Esmé Fairfax Chinnery was born at Cobham, Surrey, on March 28th, 1886, and took his certificate (No. 210) on a Deperdussin monoplane at Brooklands, the claim being passed by the R.Ae.C. Committee on April 30th, 1912. He was the son of the famous athlete Walter Moresby Chinnery, so long identified with the London Athletic Club. Some of his father's genius for athletics was transmitted to him, for when going up from Eton to Brasenose, Oxford, he was chosen to take part in the competitions at Queen's Club against Cambridge. Though he never got into the Eleven at Oxford he was a good cricketer, but he was up in a particularly sorry year.

At Eton he did well, and played in the Eton and Harrow match at Lord's in 1905, when on the Saturday play proceeded until half past seven, only for the match to be drawn, Eton, with a wicket to fall, being 76 runs behind. On the first day he made a brilliant 40.

He was also a noted boxer and represented the R.F.C. in the Army Championships last year.

He was gazetted second lieutenant to the Coldstream Guards in August, 1910, and promoted lieutenant in July, 1911. In 1913 he joined the Royal Flying Corps, and, as flight commander, received the temporary rank of captain on September 4th last year.

Captain Chinnery escaped with a severe shaking in an accident to a B.E. which he was piloting at Lilbourne Camp on manoeuvres in 1913, the machine stalling and diving just when he was coming into the landing ground after a long reconnaissance in bad weather.

A typical Guards officer, hard working, very much in earnest about his profession, and possessed of singular charm of manner, Captain Chinnery's loss will be deeply felt by all who knew him.

The pilot of the machine, whose name was given as Laporte, was, one assumes, that M. Delaporte who flew brilliantly one day early last year on a Sanchez-Besa biplane at Hendon. The Sanchez-Besa on which he performed was practically the same as the Voisin now used by the French Army, these machines being built by the Voisin firm. The accident was attributed to a broken control wire, but one report from a reliable source states that a brazed joint in the control pillar gave way, and the whole thing came adrift in the pilot's hands. He endeavoured to reach the Seine with rudder control only, but struck the bank only a few yards from the water which might have saved them both.

\* \* \*

A fatal aeroplane accident occurred at Farnborough on

January 19. Second Lieutenant M. L. Gardner, Royal Flying Corps, who joined the Corps at Farnborough on the 11th inst., was flying a Maurice Farman at about 4.30 p.m., and was descending from his second flight when the machine dived, struck the ground heavily, and caught fire. Captain Beor, R.F.C., who had been watching the flight, was the first to reach the spot, but so fierce were the flames that it was some time before the pilot's body could be extricated, and he was then dead. The machine was absolutely destroyed.

At the inquest at Farnborough on the 22nd, several witnesses agreed that he was flying perfectly at a height of upwards of 200 feet. He then planed down, and when at a height of 60 feet the machine dived vertically, struck the ground, and burst into flames, and that nothing could be done to help the pilot.

It was stated that the machine was in good order and had previously been used in several flights on the day of the accident.

A verdict of "Accidental Death" was returned.

Maurice Leigh Gardner was born in London on June 27th, 1886, and took his certificate (No. 1002) on a Wright biplane at the Beatty School at Hendon on December 20th, 1914. A pathetic interest attaches to the fact that his name appeared in the "London Gazette" as being appointed second lieutenant on probation on the very day he met his death.

An eyewitness of the accident expresses the opinion that Mr. Gardner must have fainted in the air and have fallen onto his controls, so causing a dive for the last 60 feet. It may be, however, that he merely misjudged his height, and had no room in which to pull the machine back, as in the fatal accident to Flight Sub-Lieut. Ffield, R.N., at Hendon recently. It was not made known whether he was strapped into his seat or not.

\* \* \*

The following casualties in the Expeditionary Force are reported from General Headquarters under date January 21st:—

#### KILLED.

Raleigh, Major G. H., Essex Regiment and Royal Flying Corps.

Roche, Captain H. J. A., Royal Munster Fusiliers and Royal Flying Corps.

\* \* \*

Major George Hebden Raleigh, Essex Regiment and Royal Flying Corps, was born at Melbourne on June 20th, 1878, and received his commission in the Essex Regiment in 1899, becoming lieutenant in the following year.

As a lieutenant he was with the Kimberley Relief Force under Sir John French, and marched with the 1st Essex to intercept Cronje at Paardeberg. The battalion was in the 18th Brigade of the late General Kelly-Kenny's 6th Division, and Lieut. Raleigh was at Poplar Grove when the Boers were brushed aside and Driefontein stormed. The Essex delivered a gallant bayonet charge which drew high praise from Lord Roberts, and in the course of this assault Mr. Raleigh was dangerously wounded. At the Vet Rover and Zand River he also served when the Essex did such good work in getting the baggage across the drifts. Lieut. Raleigh was with the Essex on the way to Pretoria and took part in the Pretoria-Johannesburg-Diamond Hill-Belfast battles, which ended in President Kruger's flight to Europe. He next moved to Frederickstad to the relief of General Barton, and other actions followed, including Colesberg. He also served with a mounted infantry force and had the distinction of possessing the Queen's South African medal with six clasps and the King's with two clasps.

He became a captain in 1908 and was posted to the 1st Essex in Burma, afterwards serving on the North-West Frontier. He then came home to do duty at Warley with the 3rd Essex—the old Essex Rifles Militia—when he gave great attention to flying, taking his certificate, No. 106, on a Bristol biplane at Brooklands, the certificate being dated March 12th, 1912.

In 1912 he did duty with the old Air Battalion R.E. at South Farnborough, and later was appointed to command No. 4 Squadron R.F.C. at Farnborough, and later at Netheravon.

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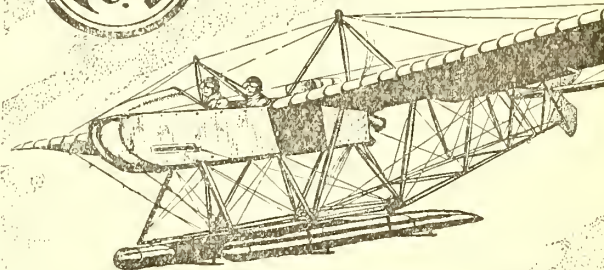
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He did fine work on Salisbury Plain, notably by his experiments in flying at night, and in June last he was promoted to the rank of major by brevet.

In France he did much good service, and Sir John French mentioned him in despatches in October. His death will be deeply regretted by the very many people who have been concerned with him in the progress of aviation.

It is reported that Major Raleigh was killed in an accident to a Sopwith "tabloid." The engine stopped while over the sea near the Belgian frontier, and in gliding to the shore the machine came down nose first in a few feet of water. The description gives one the impression that in the endeavour to reach dry land by prolonging the glide the pilot may have stalled the machine, causing it to dive. He was taken out of the machine alive, with both legs broken, and internal injuries which caused his death in hospital shortly afterwards.

\* \* \*

Captain Hyacinth Joseph Albert Roche, Royal Munster Fusiliers and Royal Flying Corps (killed in action), was born in Dublin on March 10th, 1888. He joined the Munsters in 1908, and was promoted lieutenant in 1910. He took his certificate, No. 621, on a Bristol biplane at Brooklands, the certificate being dated September 12th, 1913. He was appointed to the R.F.C. on March 1st, 1910, and was promoted to Flight Commander, with temporary rank of captain, only a few weeks ago. He was a fine type of soldier, popular with officers and men, and will be greatly missed in the Corps.

Captain Roche was killed by the explosion of a bomb or bombs which he was carrying on his machine. An explosion was heard in the early morning near the town at which the R.F.C. detachment was stationed, and when the cause was investigated the unfortunate officer was found dead along with the wreckage of his machine. The assumption is that, landing in a mist, he was unable to see his height above the ground accurately, and so crumpled up his landing gear, thus exploding the bombs, which were probably grenades and not the regulation T.N.T. aircraft bomb, which has to fall a considerable height before it becomes "alive."

\* \* \*

One learns that the German aeroplane which was captured during the German raid on Dunkirk was out-manœuvred and forced to descend by Captain Holt, R.F.C., who was mounted on a Martin-Handasyde "tabloid" biplane. The officer and the makers of the machine are to be congratulated. Incidentally, the affair is a vindication of the value of the "tabloid" single-seater, so often advocated in this paper.

\* \* \*

A marriage has been arranged, and will take place very quietly in February at Holy Trinity Church, Roehampton, between Major Archibald Campbell Holmes MacLean, the Royal Scots and of the Royal Flying Corps, younger son of Mr. and Mrs. Charles J. MacLean, 3, Grosvenor Crescent, Glasgow, and Jane Cassels, eldest daughter of Mr. and Mrs. George P. Walker, Heatherwood, Putney Heath.

\* \* \*

An artillery officer writes:—"One of our airmen reported yesterday that he observed the Germans endeavouring to salve a battery of their field guns from a position they had held near the banks of the river. They soon abandoned this project, however, and he reported that the horses came away, leaving the guns behind them. One of our forward observing officers also saw a team of German horses endeavouring to extricate something from an inundated patch. The horses were almost shoulder deep in mud and water."

\* \* \*

A British officer in the Expeditionary Force which took part in the capture of Tsingtau writes:—"About November 2nd the Germans seem to have discovered the whereabouts of some of these batteries. Probably their aeroplane, which had been hovering round, did the trick, and about 3 p.m. we were suddenly treated to a large shell plumb in the middle of the camp. No damage done."

## FRANCE.

The "Télégramme" states that a German aeroplane flew over Etaples on the afternoon of the 20th and dropped two bombs.

\* \* \*

A message from Hazebrouck on January 23rd reports that the Allies' guns have brought down at Fletre, near Bailleul, a Taube flying in that district.

\* \* \*

A squadron of German aircraft made an attack on Dunkirk and the surrounding communes, on January 22nd, dropping about eighty bombs. It has been ascertained that seven persons were killed and a dozen or more wounded. A shed full of goods was set on fire. French and British aircraft went in pursuit of the enemy, one of which was brought down at Braydunes, and two artillerymen forming its crew were made prisoners. One German aeroplane reappeared about 3 p.m., dropped a bomb on the town and then flew off, pursued by the French aeroplanes.

\* \* \*

Apocryphal the raid on Dunkirk, the "Chronicle's" representative in France reported on January 23rd:—"At one o'clock this morning, in magnificent moonlight, those on watch detected on the northern horizon the enormous looming mass of a Zeppelin. Straight away the alarm was given, and eleven airmen launched in pursuit of the enemy. It was a strange spectacle, these 11 aeroplanes soaring into the silence and calm of the night and almost invisible save for the pale moonlight reflected from the surface of their curved wings. The attack was too much for the Zeppelin, which put its rudder hard over and fled at top speed in the direction from which it had come, with the covey of aeroplanes streaming after it. The result of the chase is not known, but there is a rumour that the giant airship was hit and in danger of falling into the sea. This may be the same Zeppelin that was sighted by Dutch fishermen later in the day in the sea, somewhere off the Dutch coast."

[A very artistic story, but curiously enough all the other newspaper people at the back of the front seem to be in ignorance of this night escapade.—Ed.]

\* \* \*

According to a message to the "Petit Parisien" from Dunkirk a Taube flew over that town on Sunday, January 24th, dropping two bombs, which, however, did no damage. The German aviator was fired at by anti-aircraft guns, and then pursued by one of our aviators.

\* \* \*

The "Echo de Paris" says:—"One of the great looping the loop experts is a terror to the German aviators, and whenever they see our compatriot's machine in the distance—it is a very fast one—the pilots of the Aviatiks and the Taubes fly for all they are worth. But the Germans certainly have sources of information in the town where our aerial champion lives, for every time he or his machine are not for any reason available it is not long before the German aeroplanes fly over the town and drop bombs."

\* \* \*

According to the Paris "Excelsior," every one of the aviation pilots of the Paris camp has made a solemn vow, swearing that in the event of a Zeppelin coming to Paris he will run his machine into the German airship, and, if need be, drop to earth with it. [One gives the French pilots credit for better sense. "If need be" is distinctly precious, placed as it is in the sentence.—Ed.]

\* \* \*

The "Morning Post's" correspondent, who has been visiting the Soissons district, says:—

Aeroplanes render unexpected concentrations extremely difficult unless by organisation one side can beat the other for rapid transport, as was the case with von Kluck's reinforcements north of Soissons.

Speaking of aeroplanes leads me to describe a typical battle scene in the districts I have recently been visiting. From the little hill behind a certain château one could see with glasses,

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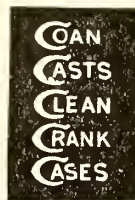
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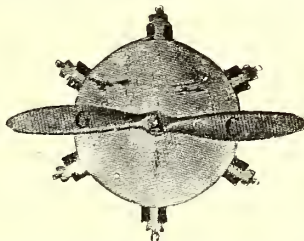


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(even without) a German captive balloon used for observation purposes. A sausage-shaped thing, but obviously with a biggish dependant car, it was naturally some distance away to the rear of the German lines. Yet, of course, if we could see it so well it could see the country where we were. Round it kept hovering aeroplanes, apparently numbers of them, which seemed waiting for an opportunity or an order to come across our way. This, of course, they did from time to time.

Now the manœuvres of an aviator when he comes to spy out a troublesome battery are distinctly interesting. Apparently he advances until shrapnel begins to worry him. Then he describes a circle, always, I suppose, watching downwards to locate the place whence the fire is coming. I have seen him drift away farther until within the zone of another battery to the rear, but unless this also interests him he returns to his first point. Should he be successful he drops his smoke rockets (generally three) and shoots away back to his line. The coolness of them is amazing, because they accept chances even with angry French aeroplanes coming rapidly up against them. Many times I have wondered that they were not hit by the shrapnel that was obviously bursting all about them. Yet it is hardly surprising that so many escape, considering that the vital parts of the fighting aeroplane are armour-plated—[Very few are armoured as yet.—Ed.]—that from below the pilot is invisible, and that the wings can sustain many perforations by bullets without having their efficiency impaired.

From the little hill above I watched three German and two French aeroplanes manœuvring about at a very high altitude, as to all appearances a snowstorm was rapidly coming up, which proved to be the case. Just as one became anxious as to the fate of the two French machines if they should have been caught in the storm they simply shot to earth in the most wonderful direct vol plané.

#### GERMANY.

The "Neue Freie Presse" informs its readers that the achievements of the German aviators have been among the greatest surprises of the war. It states that while, on the one hand, Germany and Austria-Hungary have transformed the submarine into a force before which the English and French Fleets, with their mighty ships, are compelled to sneak away, the aircraft of the Allied Empires has, on the other hand, operated in a manner surpassing a thousandfold the anticipation of the Entente Powers. [One does not imagine that Germany's aircraft have in any way surprised the R.F.C. or those who have been backing up the Corps' desire for more and better aeroplanes.—Ed.]

\* \* \*

According to a report published in the "Nieuwe Rotterdamsche Courant," a traveller who arrived at Arnhem on January 21st from Germany declared that hostile aeroplanes appeared on the 20th above Essen and dropped several bombs. He saw some houses collapse, but could not give any further details. No confirmation of the report has appeared, so it appears to be merely a traveller's tale.

A later report, of equal unreliability, states that the bombs destroyed 400 motor cars in a repair shop.

\* \* \*

Amsterdam reported on Monday that the Berlin "Lokalanzeiger" states that a raid by a number of German aeroplanes to the suburbs of Paris, via Reims and Chaulnes, has been "a complete success." The ignorance of Paris on the subject is lamentable (from the German point of view.)

#### RUSSIA.

Reports from Lulea, in the extreme north of Sweden, state that rumours have lately been current of German airships having been seen at night over the Tornea Valley near the Swedish-Finnish frontier. From several places searchlights have been observed, operated apparently from airships moving eastwards over the recently opened Finnish-Swedish Railway line, which is a connecting link of the greatest commercial value to Russia, as most other channels of communication, with the exception of the Trans-Siberian Railroad, are for the

present closed. It is generally believed that the object of the airships is to blow up certain big bridges on the new railroad. [The story comes via the Central News Agency from Copenhagen, via Sweden. Also, there is, one gathers, a phenomenon known as the Aurora Borealis, observable during the winter in such high latitudes. Nevertheless, there may be a fell German plot to make this line a still more finished-Swedish railway.—Ed.]

\* \* \*

It was reported from Petrograd, on January 23rd, that the Russians had sunk, near Sinope, the steamer "Georgius" (?), which was on her way to Trebizond (on the Black Sea, in Asiatic Turkey) with 16 aeroplanes on board. The machines were said to belong to the Turkish aerial fleet, and were destined for the use of the army in the Caucasus. The surface of that country is chiefly vertical, and is not recommended to aviators.

\* \* \*

Among the farrago of boastful and irritating nonsense with which the Petrograd correspondent of the "Morning Post" is allowed to disfigure that otherwise excellent paper one occasionally finds matters of interest. The following quotation is a fair specimen of his style. One knows that his statements about the German aviator are untrue, but the point about the smoke-bombs is of some value:—

"The Germans have used their aeroplanes on this side for a variety of purposes, from bill-sticking to bomb-dropping. As scouts they do not appear to have fulfilled their mission, as the Russian aeroplanes do not allow them to get far enough behind the lines to discover the embryo formations of future developments. For some little time past, as at the beginning of the war, bill-sticking has been their principal occupation, and the bills now distributed offer money rewards to Russian soldiers surrendering for all weapons brought along with them.

"Quite recently the German aeroplanes have begun to specialise on the business of range-finding for their artillery, and have brought into use some quite new devices. They had to wait until a sudden thaw cleared away the snow in Poland, for over the white pall of snow their new signals were not effective. These are noiseless bombs, which burst unnoticed, harm nobody, and are at first almost invisible. After an interval, however, they throw off an enormous quantity of perfectly white smoke, which lies in swathes, rising in the air like the morning mist in mountain valleys. The object, of course, is to provide an exact target for the enemy's long-range artillery. Having located a Russian battery, the aeroplane drops one of these noiseless chemical contrivances, and in five minutes, when the smoke target develops, that battery has a very warm time.

"Whatever the composition of these sighting bombs may be, it is something that continues to smoke even when put into water, and the smoke does not begin to come off till after an appreciable interval has passed from the moment the bomb strikes the ground. At first these bombs were taken to be only ordinary aeroplane bombs which had failed to explode. Whether they will very much aid the German fire I doubt, for the Germans plug away devotedly at this smoke target, while there is generally nothing to prevent the battery aimed at changing its ground. The Russians have always shown alertness of mind in turning the enemy's machinery to their own profit."

[Probably the German guns "search" the area round the target fairly effectively, and it does not require much "alertness" to clear out when a position becomes too hot to hold.—Ed.]

"As for destructive bombs, the Germans seem to have abandoned them on this side as aeroplane weapons. They have never done any appreciable harm, they do not even scare the peaceful inhabitants of towns, they very rarely find soldiers so massed together as to make aeroplane bombs an effective military weapon. It is only in the far rear that such formations can be found, and the Russian aeroplanes prevent those of the enemy getting far to the rear. Therefore, a new device has now been tried. This is a sort of long iron box which explodes in the air, and from it drops hundreds of

weighted steel darts, spread by the explosion so as to cover a considerable area. One of them picked up by a friend of mine bore the inscription: 'French patent, made in Germany.' This device also is not effective in a military sense, unless dropped over masses of men."

[The bursting box for flechettes seems to be a Petrograd invention.—Ed.]

#### AUSTRIA.

According to the special correspondent of a Danish paper in Vienna, a most exciting, dramatic air fight took place over Przemysl. An Austrian aviator ascended from the fortress to carry letters to headquarters. He was immediately chased by Russian aviators, and the chase finished with a collision high in the air between a Russian aeroplane and the Austrian. The correspondent says "the Russian aeroplane was smashed," but nothing is mentioned about the Austrian.

#### BELGIUM.

The Sluis correspondent of the "Tyd" reports that the number of bombs dropped by British pilots on Ostend was considerable. Some German soldiers were killed, but no citizens were hurt. The aviators aimed at the stations and depot, both the stations being damaged. The correspondent praises the daring conduct of the British airmen, and says that they have established a reputation during the present war. [The information, but happily not the reputation, comes from Holland. The latter is the more reliable.—Ed.]

\* \* \*

It was reported from Amsterdam on January 23rd that at 5 p.m. on January 22nd a French aviator, reconnoitring above Bruges, dropped several bombs. On being fired at he disappeared.

\* \* \*

The correspondent of the "Tyd" at Sluis says that British aviators have displayed great activity over Ostend, where large numbers of bombs have been thrown on military depots and railway stations. No civilian has been injured, although several German soldiers were killed.

#### ITALY.

The Admiralty and War Office of this country have decided that this is the right moment to touch certain funds which have been put aside—and have accordingly increased and multiplied exceedingly, let us hope—for the development of military aviation.

The first of the civilians to pass for his military (higher) brevet is Clement Maggiora. This he did in the course of a flight across country, under the usual regulations, except that the return journey was made in the dark. Maggiora has thus—fine pilot as he was—taken five months under good weather conditions to obtain this higher brevet, which says much for the severity and thoroughness of the civilian pilot's perfection course. In this flight Maggiora encountered intense cold and

a strong wind, so that it really counts for considerably more than the 300 kilometres of the Regulations.

Two other trips of the same distance, and under the same rigid conditions, were accomplished on the same and the following day by military pilots Muraro, of the Venaria escadrille, and De Bernhardi, N.C.O., attached to the Piacenza escadrille, the latter on an observer machine loaded with 170 lbs. of sand.

Also, with a passenger, a similar flight was made about Aviano-Padua by Brigadier Cattaneo, of Carabineers, who completed his superior brevet tests by the exploit.

Signor Bossi, in forwarding me some nice photos of his seaplanes at Venice, tells me to expect shortly others of a completely different type of sea-machine, of which till they satisfy the naval authorities he naturally cannot divulge details. This firm is going in for building very large machines from conviction; may they also sell largely!

A soi-disant true explanation of the reason why a certain Zeppelin on an afternoon in 1912 came down at Luneville just over the French frontier is going round the Italian sporting Press.

The vessel is said to have been sent out to provoke war, for which Germany was quite ready. Under the influence of a copious lunch the crew tactlessly sent home a wireless on the old Roman lines. It ran: "Ave Caesar, morituri, etc.," and was intercepted by a small neutral country. Twice, again, during the day, the message was received, the instruments showing that the transmitting station was travelling fast. Anxious about the matter, the next door neighbour, also a neutral State, was advised, so the news reached France. Meanwhile, the dirigible was well over the frontier forts of that country.

The commanding officer of one of them, a hot-headed, elderly soldier, ordered three of his gunners to fire blank charges at them. It was then that the motor broke down, but as France was warned, she politely sent them off to Germany, after apologising for having carried out some gun practice on the very day of their kind visit.—T. S. HARVEY.

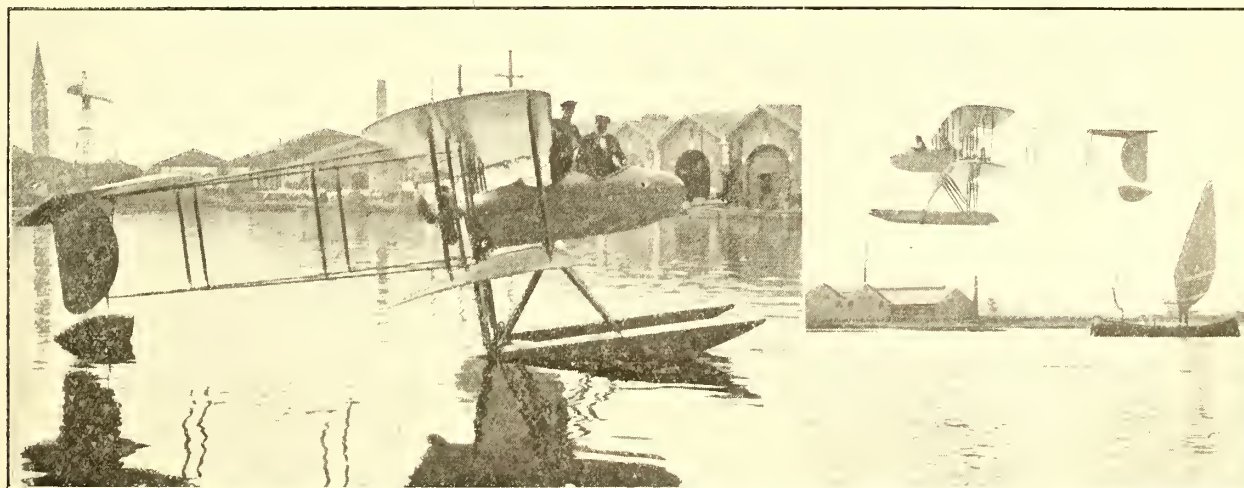
#### SWITZERLAND.

It was reported from Rome, on January 24th, by the Central News, that the Zurich correspondent of the "Giornale d'Italia" telegraphed that two giant Zeppelins left Friedrichshafen on the 23rd for Belgium. They are 30 metres longer than the ordinary Zeppelins, and carry on their backs the one an aeroplane and the other a waterplane. They are capable of remaining two days in the air.

[Inexactitude Stakes:—Rome, 1; Holland, 2; Switzerland, 3. Also ran: Ananias, and various News Agencies.—Ed.]

#### HOLLAND.

It was reported from Leyden on Saturday, January 23rd, that fishermen who had just arrived at Noordwyk state that on



The Bossi "pusher" seaplane, produced for the Italian Navy.



the previous night they saw an airship founder in the sea. They were unable to render any assistance. The Dutch report states that from their description the airship must have been a Zeppelin. The weather at the time was clear, with occasional gusts of wind. [There is distinct possibility of the story being true, but it is equally likely that what they saw was a captive balloon which had broken loose.—Ed.]

\* \* \*

A correspondent of the "Nieuwe Rotterdamsche Courant" telegraphs from Middelburg that a French aeroplane landed on Friday, January 22nd, on the Dutch island of Walcheren. The pilot was reported to be wounded in the hand and was taken in charge for combined surgical treatment and internment.

\* \* \*

It was reported at The Hague on January 23rd that a French aeroplane had landed in Zeeland. It was a monoplane of Morane-Saulnier type, and fell into a field and turned over into the Polder of Schorer, near the Sloe. It was taken to Flushing. The aviator has not yet been found.

\* \* \*

It was semi-officially stated at The Hague on January 21st that the Netherlands Government has instructed its representative at Berlin to ask the German Government to make inquiries as to the alleged passages of German airships across Dutch territory on January 19th and 20th. [Of course, there is no harm in asking.—Ed.]

#### DENMARK.

It is reported from Copenhagen that the Germans have now established a daily air patrol along the Danish frontier. Aeroplanes are constantly seen flying to and fro, and the Zeppelin activity at the air station a few miles south of the frontier has increased since the raid on England. A constant watch is kept on the Schleswig coast.

#### WEST AFRICA.

A lieutenant in the Nigerian Regiment, extracts from whose letters describing operations in the Cameroons have been published in the "Morning Post," says:—"On December 2nd all the British troops concentrated at Majaka, about forty miles up the railway (the place to which our small column had pushed its way). Nkongssamba, 102 miles up the railroad, was surrendered on December 10th, and also this place, Barè. At Railhead we found two aeroplanes which had never been unpacked—I suppose owing to the enemy having no one to work them. I hear the authorities have wisely decided to send them home, where they will be of great use. It is much better than running the risk of letting some enthusiast who says he knows 'something about the machine' experiment with them out here."

#### U. S. A.

According to the "New York Times," four United States officers who have been attached to the cruiser "Tennessee," and who arrived in New York by the liner "Finland" on December 28th, declared in an interview that British military aviators were the best in Europe. The French were brilliant as individuals, they declared, but as a military unit the British was the most efficient.

### THE PARTLY-FULFILLED PROMISE.

On the night of Tuesday, January 19th, the first air raid attended with any practical results was made by German aircraft, and may be regarded as partial fulfilment of the promise of an aerial invasion. Apparently the first place to be attacked was Yarmouth, where bombs were dropped at about 8.30 p.m. The aircraft was heard returning at about 11.30 p.m.

In all nine bombs were accounted for. One of pear shape, which failed to explode, was found to measure about 23 inches in height, and about 12 inches in diameter, its weight being 108 lbs. The size of this bomb indicates the use of airships of some kind, though bombs of this size have frequently been carried by aeroplanes. One witness at Yarmouth, Sergeant Cox, of the National Reserve, was positive that the machine which dropped the bomb was an aeroplane and not an airship. Two people were killed, a shoemaker named Samuel Smith, age 53, and an old woman, Martha Taylor, age 72. Those best qualified to judge believe the visitor to have been an airship.

Bombs were also dropped at about 10.30 at King's Lynn. One of them killed a lad of 14 named Percy Goate, who, in the opinion of the doctor, died from shock and not from wounds received, and a woman named Maud Gazeley, age 26, the widow of a soldier who had recently been killed on active service. In her case also, the doctor stated that her wounds were not sufficient to cause death, though the shock of explosion might have done so.

Bombs were also dropped on Sheringham somewhere about 9 p.m.

The affair has naturally created a considerable stir in the press as it is the first raid of its kind on this country, but it is actually of no military importance, as it has always been known that such raids were well within the capability of Zeppelins, assuming that they managed to choose a time when calm weather and a sufficient period of darkness allowed them to cross and return without interruption.

There has, of course, been the usual outcry against the bombardment, but it should be unnecessary to point out that such an attack is all in the usual way of modern warfare, and that the proper remedy for it is retaliation and not either wailing or invective.

The German official account of the operation reads as follows:—

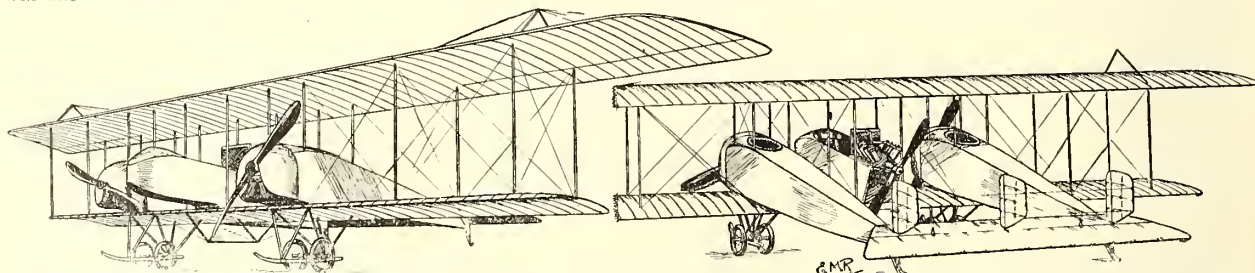
On the night of January 19th naval airships undertook an attack on some fortified places on the English East Coast. The weather was foggy and rainy. Several bombs were successfully dropped. The airships were shot at but returned unhurt. (Signed)—Deputy Chief of the Admiralty Staff, VON BEHNKE.

An officially inspired note in the German Press says:—

Our airships, in order to attack the fortified place of Great Yarmouth, were obliged to fly over other places, from which, it is stated, they were fired at. These attacks were answered by throwing bombs.

England has no right to be indignant, as her flying machines and ships in broad daylight attacked open towns such as Freiburg, Dar-es-Salaam, and Swakopmund.

Air war is acknowledged to be a means of modern war-



The 300-h.p. Caproni biplane, drawn from a description. It consists of 2 monoplane fuselages, each with a 100-h.p. Gnome engine and a Farman type nacelle with a 90-h.p. (or so-called 100 h.p.) Curtiss engine, all anchored to a huge biplane cellule. It is said to fly very well.



fare as long as it is carried out within the rules of international law. This has been done by our dirigibles.

The German nation has been forced by England to fight for her existence, and cannot be forced to forgo legitimate self-defence and will not do so, relying upon her good right.

The statement that the aircraft, of whatever nature, were fired at from places over which they flew seems quite credible in view of the fact that rural sentries generally fire at our own aircraft in broad daylight. Of course, the excuse that Freiburg and other places mentioned are open towns merely corresponds with our own claims that various East Coast towns are also open. Any town in any country at war ought to be full of troops, and is therefore liable to bombardment by any means.

The chief point in the German statement with which one quarrels is that alleging that the German nation has been forced to fight by England. One only regrets that it is not true, for had we had the courage to attack Germany fifteen or twenty years ago, this war would not have happened, and the war which would have taken place then would have been very much cheaper.

Those who recollect the horrible doubt many of us felt during the first few days of August as to whether the Government, as then constituted, really would go to war or not, will not need convincing as to the untruth of the accusation against England as the aggressor.

The chief thing now before us seems to be to ensure an adequate force of anti-aircraft guns and quick-climbing, high-speed, armed aeroplanes, to make certain, in the event of any further attack by German aircraft, that none of the invaders return to talk about it.

Implicit faith in the high state of organisation of the R.N.A.S., which is responsible for defence against aircraft, leads one to assume that at every air station intended for anti-aircraft defence there are several such aeroplanes ready to turn out in about the same time as that taken by a well-drilled fire brigade—the time is in the region of 35 seconds. Presumably the pilots and mechanics on night duty sleep beside their machines, and those on day duty are never more than 100 yards distant, and all possible aids to the quick and certain starting of engines are at hand and constantly used to test their being in working order. Signal bombs to warn people to go indoors, or downstairs, are, one expects, ready for discharge at a moment's notice, and searchlights are kept constantly trained upwards to disclose the position of invaders. If not, someone somewhere is failing in his duty.

One may point out that it is useless to send aeroplanes searching in the dark for Zeppelins which have been gone for half an hour, for there is no clue to their direction. For example, if one had gone up at Yarmouth the pilot would naturally have chased off towards London, expecting the airship to have gone that way. No sane person would have expected it to go to such an unimportant place as King's Lynn. Such searches only risk the loss of a perfectly good pilot and aeroplane without prospect of adequate return for expenditure.

Naturally every country town cannot be defended against aerial attacks, but places of military importance appear to be fairly well defended already.

Of course, one does not expect these attacks on provincial places to endear the German people to their English racial relatives, so one may look forward to adequate reprisals when British troops enter Germany.

The following remarks from the periodical "Daheim," under the title of "The Military Task of Our Aircraft," are of interest in this connection:—

"If we are to believe the younger aviators, who perhaps have never seen an airship of the latest construction, and far less have seen one in action, an airship is a thing of the past which is not worth spending another farthing on. Throwing bombs or shooting with sufficient accuracy from an aeroplane is not such an easy task as it may appear to those who have never tried it. And although it may be taken as a certainty that aviators will be found who will not shrink from self-



One of the big bombs which fell at Yarmouth and made a hole without exploding.

sacrifice in order to ram an airship, this will always be an exception, and the result dependent on many circumstances.

"Our modern airships can carry, besides the crew, the fuel necessary for a 20-hour journey, ballast, a wireless apparatus, guns, and about 2,500 lbs. of ammunition. They are thus able to reconnoitre over considerable distances, and throw explosives with great accuracy, thus causing great material losses, and at the same time demoralising the enemy. Our airships, having a velocity of about 44 to 50 miles per hour when leaving Hamburg, Cologne, or Metz, or the sheds near the Eastern frontier, could easily travel over the whole of France and the Channel and a great part of Russia and back at a height of at least 6,200 ft.

"Let us assume that when a war begins two big airships leave Hamburg and two more leave Cologne, reconnoitring over the North Sea and the Channel and going as far as England, dropping bombs successfully over its ships, its harbours, and its embarkation stations. Would not this have an effect? And would not even the expectation of those airships cause our friendly cousins a lot of anxiety? And would not the results of such raids from Metz, Frankfurt, Baden-Oos, Königsberg, Posen, etc., have the same effect with our opponents on land?

"Is it not clear to everybody how far we will be ahead of our eventual enemies owing to our excellent airships, that nobody has been able to imitate, notwithstanding the many experiments?"

This article was written in time of peace, and it is interesting to see how far out it has proved. Incidentally the load of 2,500 lbs. of bombs and the speed of 40 to 50 m.p.h. is less than allowed for in our own calculations.

### For the Benefit of "Slackers."

A British aviator on active service writes: "I am trying to summon up cheek enough to write to the 'Times.' We must have more men here, and when I see the French territorials going cheerfully to the trenches to keep the Boches from Calais, and then read of League football, it makes me sick."





good. But the  $K_x$ , or drift coefficient, decreases slightly as  $A$  increases, and also decreases considerably as  $V$  increases. This has the meaning that the drift of our full-size aerofoil will be less, proportionately, than that of the model, but it also means that we cannot feel quite so certain as we should like to, what will be the drift of our full-size aerofoil, especially if it be for a fast machine.

It is most probable that this difference is due to that part of the total reaction caused by skin friction, the component of which is small in the direction of lift but large in the direction of drift; and skin friction coefficient we know to decrease both with increase of  $A$  and with increase of  $V^2$ . The best

(Fig. 6.) Assuming first that the plan form of our aerofoils is rectangular and that we vary the Aspect Ratio only:—

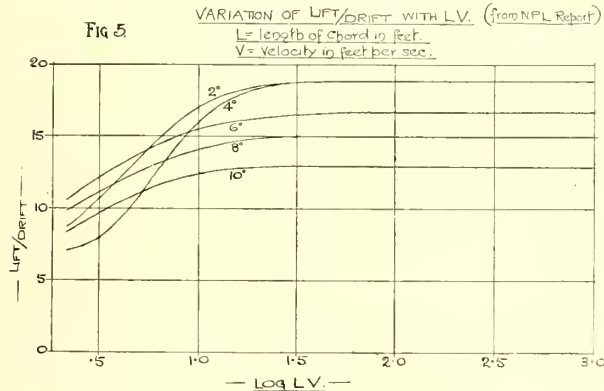
The National Physical Laboratory gives us this table of Lift Coefficient values, and Lift to Drift values for an aerofoil of constant section and of Aspect Ratio varying from 3 to 1 at values of  $i$  from  $-2^\circ$  to  $+20^\circ$ . I suggest using this table comparatively; i.e., suppose we have figures for a model of 6 to 1 Aspect Ratio and wish to calculate its properties for some other Aspect Ratio, say, 4 to 1. We shall take it that its values at 4 to 1 will be to its relative values at 6 to 1 as are the corresponding values in this table for 6 to 1 to those for 4 to 1.

There is no doubt, from such few experiments as have been made, that it slightly increases the aerofoil efficiency to rake the ends somewhat, making the trailing edge longer than the leading edge. This is because such a formation of ends decreases the end losses. And probably the lower the Aspect Ratio the more should the ends rake. In practice, however, it is better not to rake the ends too much, as we cannot then get the best distribution of stay attachments along both front and rear spars.

I suggest about  $30^\circ$  Rake for 4 to 1 Aspect Ratio,  $25^\circ$  for 5 to 1, and  $20^\circ$  for 6 to 1, but these are quite arbitrary values.

From a strength point of view it is advantageous to taper the aerofoils from root to tip. But as this means a structure considerably more difficult and costly to make, I do not think it is quite justified.

As regards choice of Aspect Ratio:—For the same surface, the lower the Aspect Ratio the stronger is the aerofoil, or the lighter for the same strength, but the lower will be the maximum Lift to Drift value and the maximum value for Lift. The efficiency at very small and very large values for  $i$  is not much effected, and, in fact, appears from this table to be



thing that we can do is to use the results which the N.P.L. gives us in the latest report of the Advisory Committee.

(Fig. 5.) Here we have for several different  $i$  values curves of lift to drift on a base of log  $LV$ , where  $L$  = length of chord in feet, and  $V$  = velocity in feet per second. By using this we can from model figures obtain very fairly accurately those for a full size aerofoil at any speed.

It is necessary now to consider the effect of plan form.

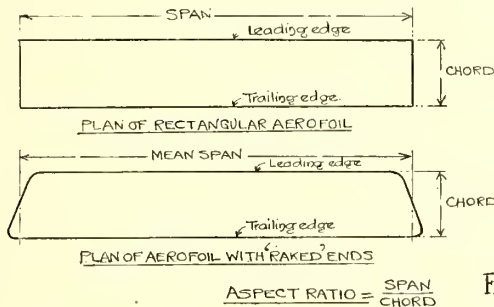


Fig. 6

TABLE FOR VARIATION OF ASPECT RATIO. (NPL)

Value of $i^\circ$	ASPECT RATIO											
	8/1		7/1		6/1		5/1		4/1		3/1	
	$K_y$	$L/D$	$K_y$	$L/D$	$K_y$	$L/D$	$K_y$	$L/D$	$K_y$	$L/D$	$K_y$	$L/D$
-2	.028	1.0	.012	.4	.044	1.8	.052	2.4	.055	2.4	.055	2.3
0	.128	6.1	.117	5.2	.109	5.2	.110	5.5	.141	6.7	.112	5.0
2	.222	11.1	.219	11.2	.212	10.7	.199	10.2	.214	9.5	.173	7.7
4	.298	14.2	.300	14.6	.289	13.8	.283	12.6	.289	11.4	.246	9.6
6	.398	15.5	.366	14.9	.372	13.4	.354	12.5	.345	11.1	.320	10.1
8	.487	14.6	.447	13.5	.469	12.7	.430	11.4	.423	10.4	.389	9.3
10	.560	13.3	.516	12.7	.536	11.5	.519	10.5	.485	9.6	.445	9.0
12	.636	12.2	.598	11.6	.612	10.7	.595	10.1	.546	8.6	.516	7.9
14	.686	10.9	.670	10.3	.686	9.9	.656	9.2	.609	8.3	.566	7.1
16	.685	9.2	.680	8.5	.686	8.3	.685	8.2	.673	7.1	.619	6.4
18	.673	5.6	.689	5.4	.686	5.7	.663	5.3	.683	5.8	.665	5.8
20	.653	3.9	.660	4.0	.662	3.9	.645	3.8	.643	3.7	.667	4.4

$K_y$  values in above Table are in Absolute Units:  
 to convert to lb., feet, sec., units multiply above  
 values by .00236

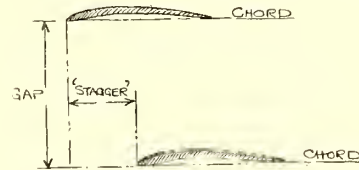


Fig. 7.

FIGS FOR GAP

$C_B$	Ratio GAP CHORD	$C_B$
.81	.4	.62
.82	.8	.77
.84	1.0	.82
.85	1.2	.86
.89	1.6	.89

FIGS FOR STAGGER

For stagger = .44 Gap  
 both Lift Coefficient &  
 Lift/Drift value improved  
 by about 5%

$C_B$  is multiplying  
 factor to obtain  
 Biplane lift Coeffts  
 from Monoplane  
 figures.  $C_B$  is  
 ditto for values for  $L/D$ .

rather better for the lower Aspect Ratios. We must bear in mind that a low Aspect Ratio is worse for both lateral and directional stability than a high one. Taking everything into consideration, I would suggest 5 to 1 Aspect Ratio for mono-planes and small biplanes, and 6 to 1 to 7 to 1 for large biplanes.

Next, for biplanes only, of course, to consider the effect of gap and stagger. Fig. 7. From model experiments, we find that the greater the gap the higher the efficiency, whilst stagger also increases the efficiency somewhat. The gap amount, however, introduces the questions of weight and head resistance of struts and stays, the greater the gap the greater these become, of course. So we must compromise, and I should suggest a gap of .8 of Chord up to equal to Chord, the smaller value for fast and relatively high-powered machines, the larger for slower and less highly powered ones.

The increase in efficiency is not very great in a staggered disposition, and it increases structural difficulties, especially if the means for obtaining lateral control is by warping the aerofoils. Stagger may, however, be of considerable value for improving the view obtainable downwards from the machine. Hence, I should suggest that the question of stagger should mainly depend upon the disposition of the pilot and passenger



in the machine, noting that if we use a heavy stagger we should use ailerons and not warp.

We are now armed with a lot of data for the dynamic properties of model aerofoils and see how we can use them for calculations on full-size ones.

Let us turn to the consideration of the weight of aerofoils as a structure, for, unfortunately, they have got to lift their own weight first and then supply their surplus energy to lifting the rest of the machine.

#### WEIGHT OF AEROFOILS.

For Similar Aerofoils:—

Fig. 8.

Let  $w$  = wgt in lbs./sq. ft.

$A$  = Area in sq. ft. &  $L$  = length of chord in feet.

Then  $WA$  = weight of Aerofoil  $\propto L^3$

$$\frac{W_T}{A} = \frac{\text{Total weight of Machine}}{\text{Area of Aerofoils}} = \text{Mean Total Loading in lbs./sq. ft.}$$

So  $\frac{W_T}{A} - w$  = Useful loading in lbs./sq. ft.  $\propto$  Load for Stress

If  $\frac{W_T}{A} - w$  = constant then for same strength  
 $WA \propto L^3$  or  $w \propto L$  or  $\frac{w}{\sqrt{A}} \propto \sqrt{A}$  (i)  
 or  $w = k_1 \sqrt{A}$

For Aerofoils of same strength  
 & same Area

$$k_1 \propto \frac{W_T}{A} - w \dots (ii)$$

From previous Data

If  $\frac{W_T}{A} - w = 5$  lbs./sq. ft. then  $k_1 = .07$

Hence, from (ii),  $k_1 = .014 \left( \frac{W_T}{A} - w \right)$

& hence, from (i),  $w = .014 \left( \frac{W_T}{A} - w \right) \sqrt{A}$  15 lbs./sq. ft.

Equation for wgt of Aerofoils.

Fig. 8: Similar structures will bear the same ultimate load per unit area, which means in our case that similar aerofoils will have the same factor of safety for the same value of useful loading in lbs. per square foot.

We shall now take basic figures from actual satisfactory aerofoils: We shall assume that we can construct an aerofoil of 100 sq. ft. surface, to weigh 70 lbs., and to stand 5.7 lbs. per sq. ft. total loading with the margin of strength necessary. This figure for weight, i.e., .7 lbs. per sq. ft., includes the weights of stays for a monoplane and of stays and struts for a biplane. Now we consider the aerofoil as stressed only by the useful loading, i.e., total load,  $W_T$ —aerofoil weight, as in flight it is stressed only by the lift it exerts over and above its own weight. We shall then take it that since the weight of similar aerofoils varies as the cube of the linear dimension and the surface as the square, the weight per sq. ft.,  $w$ , will vary as the square root of the total surface,  $A$ , for the same unit useful loading, or value of  $\frac{W_T}{A} - w$

Further, we shall take it that for aerofoils of the same total area, within the limits of useful loading desirable to employ, the weight per sq. ft.,  $w$ , varies directly as the unit useful loading  $\frac{W_T}{A} - w$ , for the same strength

We see that on these assumptions for a total surface of 100 sq. ft. the weight per sq. foot will be .7 lbs. for 5 lbs. per sq. ft. useful loading, but for a total surface of 400 sq. ft. it will be 1.4 lbs. for the same useful loading. This is one of the basic facts against the building of large sized machines; for unless we can improve our structure (and of course the larger the machine the better chance we have of so doing) the greater must the proportion of aerofoil weight to useful load become.

We have then, that since

$$w = k_1 \sqrt{A} \text{ lbs. per sq. ft., and}$$

$$k_1 = .07 \text{ when } \frac{W_T}{A} - w = 5.0 \text{ lbs. per sq. ft., and}$$

$$k \propto \frac{W_T}{A} - w \text{ (useful loading)}$$

$$\text{therefore } k_1 = .014 \left( \frac{W_T}{A} - w \right)$$

and therefore

$$w = .014 \sqrt{A} \left( \frac{W_T}{A} - w \right) \text{ in lbs. per sq. ft.,}$$

an equation for the weight per sq. ft. of our aerofoils, in terms of total aerofoil area and total weight of aeroplane.

#### ITEM WEIGHTS. Fig 9

(i) Weight of Tail unit, i.e. of Tail Plane, Elevators, Rudder & Fin (if used)

$$W_T = \frac{1}{5} \text{ total Aerofoil wgt} = \frac{1}{5} wA$$

(ii) Weight of Body,  $W_B$ —

If  $l, b$  &  $d$  represent respectively length, mean breadth & mean depth of Body in feet

$$\text{then } W_B \propto l^2 \times b \times d$$

$$\text{+ If } l = 20 \text{ ft, } b = 2 \text{ ft, } d = 2 \text{ ft then } W_B = 40 \text{ lbs}$$

$$\text{Hence } W_B = .057 l^2 b d \text{ in lbs}$$

(iii) Weight of Seating = 10 lbs per person

(iv) Weight of Controls = 30–50 lbs, dependent on type.

(v) Weight of landing gear complete,  $W_G$ —

$$W_G = \frac{1}{14} W_T, \text{ of this wgt of Tail Skid} = \frac{W_G}{20}$$

#### Item Weights.

We must now get figures for our other weights. Fig. 9.

Firstly, we should note that, generally speaking, the size of the Tail, Rudder, and Vertical Fin (if used) will vary directly as the size of the Wings (this assumes, of course, approximately constant proportions for the machine). I would suggest, then, to put down the necessary weight of Tail and Rudder and Fin as a proportion of the aerofoil total weight, and a fair figure to take is one-fifth.

The weight of the Body introduces the question of the number of people the machine is to carry. We can take it that a sufficiently strong body of the timber and wire, fabric covered, girder type can be made, of about 20 ft. length and 2 feet mean breadth and depth, to weigh about 90 lbs., i.e., if  $l = 20$  feet,  $b$  and  $d = 2$  feet then  $w_B = 90$  lbs.

Since in such a structure the struts are (generally speaking), very strong compared to the fore and aft members, for the kind of stresses to which it is subjected, we shall assume that the weight will vary directly as the breadth and depth, but as the square of the length. Hence, we get an equation for weight of Body  $w_B = .057 l^2 b d$  in lbs.

As for the contents of this body. We can seat each person properly for about 10 lbs., and the weight of control mechanism will be from 30 lbs. to 50 lbs. dependent upon the type employed.

It remains only to consider the weight of suitable landing gear. I think it fair to consider the weight of the Landing Gear,  $w_G$ , as varying directly as the total loaded weight,  $W_T$ , of the machine, and I think a suitable one can be designed at one-fourteenth of the total loaded weight. This weight we shall take as including the weight of the Tail Skid. For an average landing gear and tail skid we may consider weight of Tail Skid alone as  $= 1/20$  of total weight of Landing Gear.

(To be continued.)

#### Our Intelligent Proletariat.

Scene: (Outside a tavern near "The Angel," Islington. Time, 8.30 p.m. Present, a War Department motor-lorry containing a pair of R.E. wings, standing on edge, back to back. Attendants temporarily eclipsed).

First Citizen: "Wot's that, Bill?"

Second Citizen: "Why, that's one o' them Army airships."

First Citizen: "Garn! Where's the gas?"

Third Citizen: "Carn't yer see it's been let out?"

**The Britannia Trophy.**

The Committee of the Royal Aero Club having considered the various performances of British aviators during the year 1914 up to the time of the war, it was unanimously resolved:—

"That the Britannia Trophy for the year 1914 be awarded to Squadron Commander J. W. Seddon, of the Royal Naval Air Service, for his seaplane flight on the 21st January, 1914, from Isle of Grain to Plymouth via Calshot."

Squadron Commander Seddon, R.N., accompanied by a passenger, left Isle of Grain on a Maurice Farman seaplane at 9.15 a.m., arriving at Plymouth about 4.20 p.m., having made one stop, viz., at Calshot, for 1 hour 40 minutes. The flight was made round the coast, the distance being approximately 325 miles, and was undertaken with the intention of assisting in the search for the submarine which had disappeared outside Plymouth a day or so before.

**Our Triumphant Aeroplanes.**

It was reported in the "Observer" on Sunday that Dr. Richard T. Glazebrook, Director of the National Physical Laboratory, in an address on aerial navigation at the Royal Institution, on Saturday, January 23rd, said he had received a very gratifying letter from a friend of his at the front.

His friend said there was a marked ascendancy in British aeroplanes as compared with those of the enemy, and that the appearance of German aeroplanes was becoming quite rare, none having been seen for some days.

Indicating the progress that had been made, Dr. Glazebrook mentioned that whereas in 1912 the Cody machine which won the military competition prize had a maximum range of from 72 to 48, or 33 per cent., in 1914 the Sopwith machine recorded a range of 92 to 37 miles an hour, giving a range of 60 per cent.

Another interesting fact was that by altering the shape of the section of a wire it had been found possible to reduce the horse-power of a machine required to fly 70 miles an hour by from 10 to 12 per cent. This showed the importance of attending to small matters of detail and continuing assiduously in experimental work. [Now this is distinctly a case where a well-informed Censor would have used his power. Possibly German designers knew as much, but they might not have done so, and that is why a statement about wire was carefully disguised in this paper last week.

One is grateful to Dr. Glazebrook of the N.P.L. for admitting the existence of aeroplanes other than those designed by the R.A.F.—Ed.]

**Practical Points.**

An old and valued correspondent, who has written under the pseudonym of "Slide Rule," says:—"Apropos 'Practical Points for Consideration' the opening relating to propellers is of course very fairly true as there is very considerable uncertainty as to design of these things. On the other hand, it is to be remembered that in the ordinary way the poor propeller designer has very few data to go on. There is a distinct tendency on the part of the aeroplane designer to underestimate the head resistance of his machine particularly before he has tested it, and such an error is badly against the propeller maker.

"The incident of the four-blader reduced to a two-blader is quite to be expected. It must be remembered that a propeller requires horse-power nearly proportional to the cube of the speed—and it is well known that a four-blader will not absorb anything like twice the h.p. at the same speed as either of its halves would do. None the less it may be only very slightly inferior in efficiency, and it pays to save the diameter and consequent chassi resistance and put up with the less efficiency.

"As to aspect ratio, it is fairly well established that aspect ratio is relatively unimportant with flat surfaces, and at very fine angles of incidence. Hence, for relatively light loadings and low cambers associated with very high speeds, as in 'tabloids,' aspect ratio may be more or less neglected. At heavy loads and coarse angles aspect ratio is of very grave importance, except on planes having a very low efficiency. Your suggested 1,600 sq. ft. biplane with a chord of 20 ft. and

a camber of 2 ft. would give a very great lift, but also would probably give a very high drift, as the camber is on the excessive side, at high speeds and fine angles. At its efficient angles, corresponding with fairly slow speeds for any ordinary loading, it might be fairly good, but could probably be beaten by a narrower plane of lower camber and bigger span in spite of extra weight.

"Reverting to propellers, these should, by analogy, be relatively insensitive to aspect ratio as their high speed means low intrinsic loading and a small angle of attack, and the immense variation possible in propellers without serious change in their performance shows that they are so; but there is a limit to the decrease in diameter allowable which depends on the head resistance of the machine, I should imagine, and very little else. Hence, the better a machine is from the head resistance point of view, the more it should be possible to reduce aspect ratio.

"You will recollect that such machines as the Dep. and Ponnier Gordon-Bennett racers ran 160-h.p. Gnomes on propellers of rather smaller diameter than those fitted to standard 80-h.p. Gnome machines of the same make.

"There is, of course, an immense amount of work to be done in all these matters, and at present it is no use cursing the theorists, because they have not had anything like time to cover the beginning of things yet.

[Agreed. But one wishes the theorists would admit their ignorance, and would not scoff at the mere practical man, and pretend that they know already all there is to know.—Ed.]

**A Peaceful Mission.**

The "Figaro" gives an account of how a surgeon saved a patient by using an aeroplane. A few days ago at St. Cyr the military surgeon was suddenly rung up. A mechanic at Villacoublay starting a motor had been caught by the propeller and his leg was very badly mangled. First aid methods were unable to stop the bleeding. An aeroplane was on the point of starting. The observer got out and the surgeon took his place, and within a few minutes was with the patient.

A similar exploit was said to have been performed by the late Dr. Raymond at Villers Cotterêts. A year or more ago a priest in Morocco flew for an hour across the desert to administer the last rites of the Church to a dying soldier.



A MAN OF THE MOMENT.—Mr. A. V. Roe, with Mrs. A. V. Roe and the two small Avros.



### Optimism in the Aircraft Industry.

As most people in the aeroplane business know that the Rolls-Royce firm are making aircraft and aero engines, the following remarks of the Chairman at the firm's general meeting are of interest:—

After a few weeks of the War they were approached by the British Government to manufacture ordnance of a superior class, and such as few could attempt, and the firm were now engaged upon it almost to the exclusion of what they first undertook. This superior class of ordnance promised to suit their works and organisation well and to afford better profits, and it was hoped that they would be so successful in its manufacture and gain such a reputation for it as to justify their continuing to make it quite independently of war times. It was of such a nature that if they were successful, as they anticipated, the demand would always exist as did that for their motor chassis. He was sure, if those shareholders who had complained of the firm making such goods were present, they would see they had been rather hasty in drawing their conclusions. He could not describe the ordnance they were making, because they were requested not to disclose more than necessary.

Of course, it must be appreciated that departures of this character could not be effected at short notice. Designs, experiments, drawings, patterns, and tools had each in their turn to be made before anything could be produced, and a considerable time must be absorbed in obtaining a sufficient momentum. Three months of this year may now be said to have gone with little benefit from such new sources, but every effort was being made to make the best of the remainder. When the war broke out the company's trade, as he had already said, was largely diminished, but it commenced to recover within a few weeks, and already the production of motor chassis had reached half the maximum hitherto attained, which in these times was a remarkable achievement. If, then, their usual trade of manufacturing motor-car chassis showed such buoyancy, and they shortly had a second string to their bow in the form of special ordnance, they might eventually do as well as ever.

### School and Weather Reports.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
East Coast ...	Fine	Dull	Fine	Wet	Snow	Fine freezing	Windy
Hendon ...	Gale	Fine	Rain	Windy	Gale	Windy	Windy
Windermere	Flying all Day	Rain	Wind	Flying	Flying	Wind	Flying all Day

**Hendon.**—AT THE GRAHAME-WHITE SCHOOL.—Instructors: Messrs. Manton, Russell and Winter. Pupils with instr.: Prob. Flt. Sub-Lieuts. Digby, Halifax, Hilliard, Petter, Souray and Wood. Strts. alone: Prob. Flt. Sub-Lieuts. Wood, Walmsley, Digby and Mr. Greenwood. 8's or circs. alone: Prob. Flt. Sub-Lieuts. Mills, Besson, Driscoll and Mr. Greenwood. Certificate taken: Prob. Flt. Sub-Lieut. Besson. Machines: Four Grahame-White biplanes.

AT THE LONDON AND PROVINCIAL AVIATION CO.'S SCHOOL.—Instructors: Messrs. Warren and Smiles. Pupils doing strts. or rolling: Messrs. Noakes, Lincoln, England, Derwin, all rolling; Collett, Laidler, Henderson, Moore, and Bransby Williams; Mr. Collett half circs.; 8's and circs. Mr. Abel. Machines: L. and P. biplanes. School at work every day except Friday.

AT THE HALL SCHOOL.—Instructors: Messrs. J. L. Hall and J. Rose. Mr. Waterson passenger with Mr. Hall on Tractor No. 4. Mr. Davy 6 good rolls. Mr. McConnochie 10 strts. Mr. Cini 4 rolls. Mr. Waterson 8 rolls. Mr. Williams circuits and 8's at 500 ft. on 45-h.p. brevet machine. Machines: No. 3 and No. 4 Hall tractor biplanes.

AT THE BEATTY SCHOOL.—Instructors: Messrs. Geo. W. Beatty, E. Baumann and G. Virgilio. Pupils with instr.: Lieut. Bannatyne (83 mins.), Lieut. Broughton (20), and Messrs. C. Leeston Smith (25), J. D. Newberry (15), E. T. Anstey Chave (44), P. E. Cornish (20), G. Merton (25), G. Beard (42), G. Donald (60), G. Perrot (9), T. F. Roche (7), B. de Meza (5), M. J. V. Miller (7), J. H. Ormsby (35), A. G. Hayward (20), V. E. Faning (5), Gerrit Forbes (36), H. H. Bright (22), F. R. Laver (17), J. H. Moore (9), and P. C. Cooper (5). Machines: Beatty dual-control biplanes.

AT BEATTY SCHOOL (week ending January 17th, 1915, delayed in transmission).—Instructors: Messrs. Geo. W. Beatty, E. Baumann, W. Roche-Kelly and G. Virgilio. Pupils with instr.: Messrs. J. D. Newberry (55 mins.), A. Gordon Bond (15), E. T. Anstey Chave (75), P. E. Cornish (62), G. Merton (37), G. Beard (20), G. Donald (12), G. Perrot (15), T. F. Roche (20), B. de Meza (15), M. J. V. Miller (17), Lieut. Bannatyne (15), Ormsby (15), Faning (15), G. Forbes (8), H. H. Bright (30), Laver (10) and J. H. Moore (6). Machines: Beatty dual-controlled biplanes with 40-h.p. Wright, 50-h.p. Gnome and 60/70-h.p. Wright engines. The new 60/70-h.p. machine was put into commission early in the week and at once proved its value, for although five days out of the week were so very bad as to make training almost impossible quite a lot of flying was done, this being largely due to the new high-powered machine.

**Windermere.**—THE SEAPLANE SCHOOL.—Instructor: Mr. W. Rowland Ding. Pupils with instr.: Messrs. R. Buck (50 mins.), A. Johnson (55), T. Hubbard (34), G. L. Raitton (35), E. Ashley (18). Strts.: Mr. A. Johnson (15). Circs. alone: Mr. R. O. Lashmar (165) now ready for certificate. Machine: H.A.C. propeller biplane. On Friday Mr. Ding continued instruction after dark, making landings by moonlight, a record in tuition.

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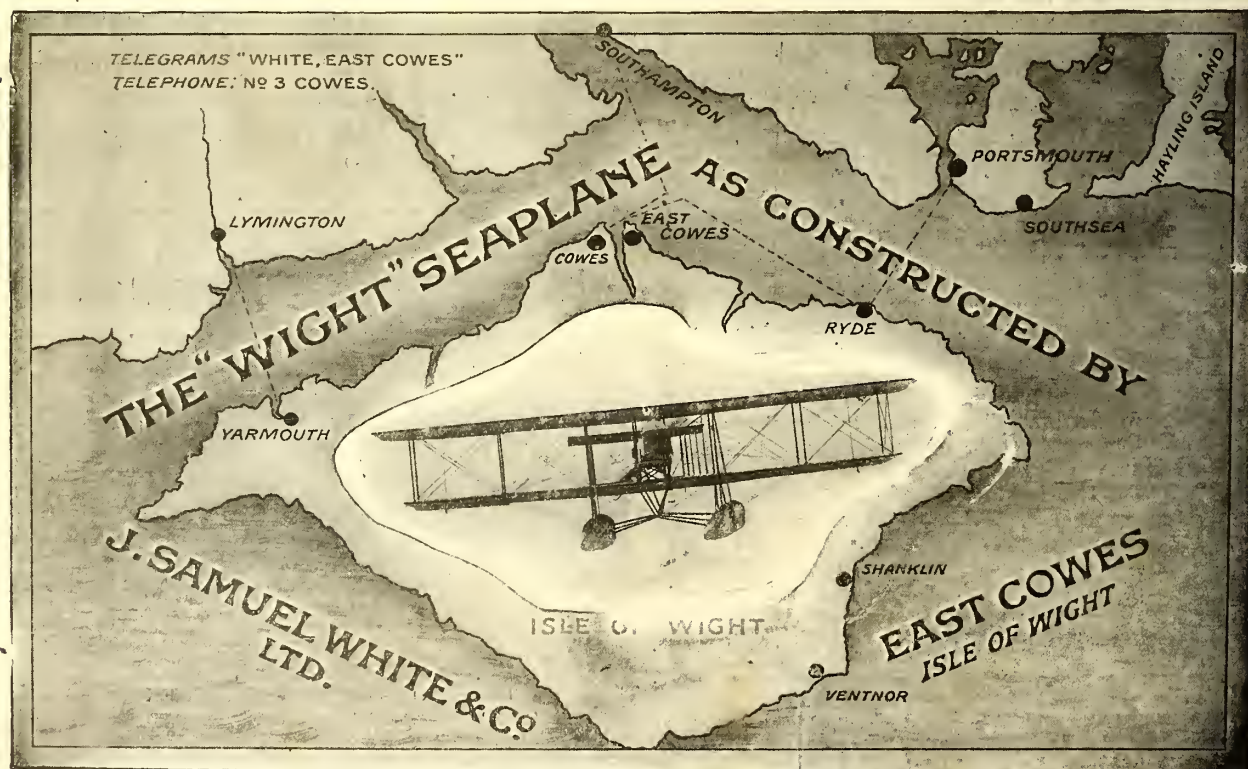
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WEDNESDAY, FEBRUARY 3, 1915.

No. 5

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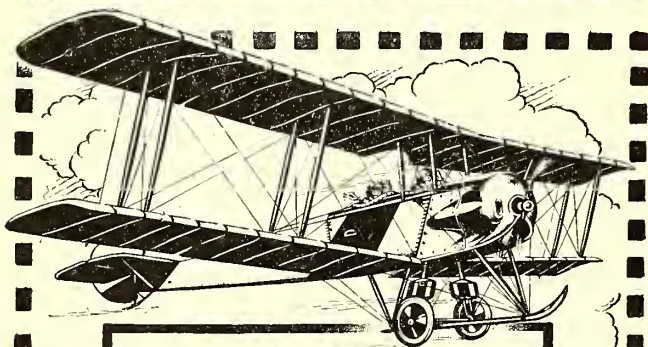
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## Night Flying

When the late Richard T. Gates first investigated at Hendon the possibilities of flying by night, somewhere in 1913, and afterwards made night flying a regular feature of the exhibitions at the aerodrome under his energetic management, he probably never thought how soon many of the points then discovered about the practice of flying in the dark would be of use in actual war.

Actually, it is doubtful who was the first person to fly in the dark, but I fancy the credit is due to a young aviator, now an officer in the Royal Naval Air Service, who experimented near New York with electric headlights on his aeroplane as the only illuminant to show him where to land. In any case, Hendon was the first aerodrome to take the subject up seriously, and it was the irony of fate that the man who had done so much to add to the store of knowledge of this phase of flying should be the first to be killed in its practice. That so much which is now of high value to the Services was learned at Hendon adds to the great debt all connected with aviation in this country owe to Richard Gates, who made a success out of most unpromising material, and did more than any one man to make the people of this country appreciate the possibilities of flying as a sport and as a means of locomotion.

Now, in war time, night-flying becomes a matter of considerable importance, both as a method of offence and defence, and it is likely to become more so. Take, for example, the raid by night on Brussels, which was recently reported, though it has never been officially confirmed. A surprise attack by night is not only likely to have greater moral effect than one by day, but it is actually safer for the fliers, provided they have thoroughly reliable engines, for they are very unlikely to be seen and fired at till they reach their objective, and the only risks they take are at starting and when landing on their return. They are not even likely to be attacked in the air when bomb-dropping, for they probably drop their bombs and get away again before any hostile machines can be turned out to chase them.

The risks from anti-aircraft guns are also likely to be reduced, for if the attacking machine is discovered by a searchlight, which is by no means certain, it seems that it would be harder for the gunners to judge their range than it would be in daylight. Even in bright moonlight, when objects on the ground are clearly visible, an aeroplane at a height of anything over a few hundred feet is hard to see from below, as those who were at Hendon during the first night-flying show, which took place on a very bright night, will remember.

In the case of a long-distance raid, say, for instance, if a big raid from our present lines were made on Essen—the report of the raid of a week or two ago being still without confirmation—there would be an obvious advantage in starting in the dark, timing the departure so as to arrive at dawn.

[It is a curious coincidence that since the notes above were written, the official Eye-witness records an attack by our aviators on a town in Flanders, which was timed to arrive at dawn, in just the manner indicated.]

Not only would the aeroplanes have a good chance of getting there without their advent being expected and anticipated, but they might safely fly low for the first hour or two, and thus might carry a bigger load of bombs and petrol than they could do if compelled to fly high to avoid being hit, and they would not have to waste perhaps half an hour or so in climbing to a safe height before starting out over the enemy's lines.

Having dropped their bombs, and being relieved of the weight of petrol expended during perhaps two and a half hours' flying in getting there, the machines would be so lightened that they could climb to a very great height soon after starting on their return journey, and so could get back over the enemy's country without being seen on the way, and thus they could minimise their chances of having their retreat cut off by enemy aeroplanes on approaching their own lines.

As mentioned above, the success of such raids by night—or any other long-distance raid, for that matter—and the safety of the pilots in any form of night-flying depends entirely on the reliability of their engines. Fortunately, we are able to obtain quite a goodly supply of sufficiently trustworthy engines from France, and before long we shall have supplies of British-built engines coming through—if, indeed, the first batches are not already being delivered. The fact that we have not had an unlimited supply of home-made engines is another sin to be laid at the door of that noxious establishment the Royal Aircraft Factory, which, as it did with various promising makes of aeroplanes, set itself out at the start to condemn everything of British origin which was not of its own devising.

Four years ago at least the Green engine had already showed its ability to stand up to severe tests, but, instead of encouraging its makers with small orders for existing types, and asking the firm to produce bigger engines with more cylinders, the R.A.F. people laid themselves out to prevent the naval and military authorities from buying these engines—presumably because, as in the case of aeroplanes, they had something of their own they wanted to develop. Unfortunately for them their own engine proved a failure, and it is only during the last few months that they have succeeded in producing one which gives somewhat more power for its weight than the 70-h.p. Renault from which it was cribbed, and, naturally, duplicates of it cannot be delivered in quantities for some time. Even when they do begin to arrive in numbers it seems that an engine somewhere in the region of 80 h.p. is only about half the size required in any machine which is to be of real use for war, according to modern ideas, except in single-seater scouts, to which the Renault-type engine has never yet been adapted.

If, on the other hand, the Green and one or two other promising engines of the early days, such as the E.N.V., had been encouraged, we might by now have been producing enough first-class engines to supply ourselves and our Allies as well. In the Green, at any rate, we should have had at least the equivalent of the



100-h.p. six-cylinder Mercédès, which is used in practically all modern German machines, an engine whose reliability is at once the envy and the despair of every pilot who is up against it.

Even two years ago or less the error could have been put right, but no effort was made to encourage British industry, and even firms who were prepared to lay down plant and make the best French engines in this country, and offered to do so if they were guaranteed absurdly small orders, were skilfully "boomed off."

However, officers in both Services, who find difficulty in obtaining absolute reliability in engines of British make, must lay the blame on the scheming of self-seeking civilian officials and the stupidity of a grossly incompetent Minister of State, and not on unfortunate manufacturers, who are trying to do two years' work in three months. Deaths and injuries through engine failures must not be laid to the charge of an industry which has had to fight hard for its bare existence against official discouragement.

#### **Anti-Air-Raid Flying.**

Apart from offensive work, night-flying is of equal importance for defence, and here, it is worth noting, continued reliability of the engines is not so extremely important, and therefore we have still better chances of success. Of course, the engines used must be sufficiently reliable for the pilots to depend absolutely on their not stopping while they are in the air, but whereas in long-distance raids it must be possible to rely on an engine running without a falter for five or six hours at a stretch every time it is asked to do so, for defensive purposes only it is almost enough if an engine can be relied upon for between an hour and two hours.

That is to say, the defender's engine only has to keep going so long as the enemy aeroplane is over his territory, whereas the enemy has to get there and back.

For several reasons the defensive side of night-flying is the more pleasant, provided always that a proper scheme of defence is organised. The worst part of the job is, obviously, sitting and waiting for something to turn up. For instance, if some cross-eyed Territorial sentry on the East Coast mistakes the steam of a distant train shining in the moonlight for the dim form of a Zeppelin, and imagines that the upward glare from the open fire-door of the engine is a spy on the ground signalling its whereabouts, and insists that the rumbling of the wheels was the sound of its propellers—it is always the propellers and never the engines that are audible to rustic ears—it must be a trifle trying to the tempers of some far-distant detachment of our defensive aircraft, to whom the advent of a great aerial invasion has been signalled, to have to sit up all night waiting for the sentry's vision to materialise in their particular direction. Still, it is all part of the game, and may be made to play a useful part in the training of the flying Services.

#### **A Matter of Training.**

It has been suggested that on the occasion of such an alarm the pilots told off for duty for that particular night should all turn out and make a short practice flight, and that the time occupied by each machine between the alarm and actually leaving the ground should be taken with a stop-watch, the said time being duly logged so that it might set a standard to be improved upon on the next occasion. Smartness in turning out should be as much a test of the value of an officer and the crew attached to his machine as it is of the value of a fire-engine detachment; and, as suggested last week, it should not take more than a minute to get off. A Zeppelin travelling with the wind would probably be doing over 60 miles an hour, which means an extra mile to go for every minute's delay.

It seems reasonable to assume that, in the event of a Zeppelin raid on any important place, the scheme

of attack would be to get to windward of the point on which bombs were to be dropped, and then drift down wind with the engines stopped so as to approach in silence. When attacked by defensive aircraft, or by guns on the ground, the airship would presumably go full speed ahead down wind to get out of range, or out of the neighbourhood of pursuit, as quickly as possible, and would then turn for home in the dark over open country, going back by a circuitous route and carefully avoiding any place where searchlights, high-angle guns, or aeroplanes were likely to be stationed.

For example, in attacking London, airships would probably cross the East Coast as high up as possible to avoid being heard, and would certainly not drop bombs on the way. They would keep over the least populous districts, avoiding all big towns, and would work round to windward before starting to drift. The assumption is that if there were a west wind they would come in from the Hammersmith end, and would clear off to the south, rather than risk having their retreat cut off by the East Coast defences, and would go back up the Channel and across France. If a number of ships came over they would probably spread out considerably on the return journey so as to divide the pursuing forces, and thus our various defensive aircraft bases would possibly all have a chance of adding to the bag, which, with any luck at all, should be a fairly big one.

#### **The Need for Practice.**

The great thing is that all officers told off for the pursuit of airships should have plenty of practice in night-flying. There is no need to take unnecessary risks by flying on windy or misty nights, but every calm evening some practice should be carried out, for, properly managed, there is very little danger about the work.

In the very early experiments at Hendon the risks were much greater than they need be now. No one then rejoiced in illuminated instrument-boards, so the pilots had to fly more or less by their sense of balance, which is very seldom acute enough to be trustworthy in the dark, or else they had to watch the movement of the elevators, or engine cowls, and their wing-tips, past the stars, or the more distant lights on the ground. When they were starting and landing they had to risk being blinded by searchlights on the roofs of the sheds, and their best guides were the small lights along the railways and the bigger ones on the pylons.

Those who have flown over Salisbury Plain have told me that when over big, dark, open spaces on a clear starlight night one can see the ground quite clearly—roads, fields and farms, and even whether land is grass, corn, or plough being quite visible—and that landing by the light of a petrol flare on ground which one knows to be properly prepared is not at all difficult.

The late Major Raleigh, whose much regretted death deprives the R.F.C. of one of its most valuable officers and most earnest workers, did a great deal of night-flying, making journeys from Netheravon even as far as Salisbury and back in the dark. Various naval officers have also flown in the dark over the water, notably Squadron-Commander Travers, R.N.—as he now is—who made a remarkable flight at midnight over the Fleet during the Mobilisation Review, on a Sopwith bat-boat, and alighted unexpectedly with some commotion but without mishap while his illuminated aneroid still informed him that he was 300 feet up in the air.

In Germany also there have been, during the past year, many long flights at night, apparently without serious accident, the duration and distance records of Herren Böhm, Stöfler, Landmann, Basser, and others involving many hours of flying in the dark.

Apparently this type of flying suits the German tem-

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perament better than feats involving greater quickness of thought, such as the breaking of speed records and looping the loop—though Herr Schüller's flying on a small D.F.W., which did something like 115 miles an hour, must not be forgotten. With engines guaranteed to run as long as the petrol supply lasts, and aeroplanes which are so solidly built that they can be allowed to come down all anyhow from a height of 30 or 40 feet without smashing the fuselage and damaging the pilot, the pertinacious German is apparently game to go into the air in the dark and stop there for hours—which suggests that a night raid by aeroplanes on London is quite as much a possibility as a raid by airships, and emphasises the desirability of giving our younger pilots plenty of practice in night-flying.

It must be remembered that the aviator who goes chasing hostile aircraft at night is not likely to return to his point of departure to land, for if he fails to catch his enemy he will probably wander about looking for him till his petrol is exhausted and he has to come down wherever Fate has led him. This indicates the need for the fitting of a really good head-light on every machine intended for night-work, for such a light, though perhaps not strong enough to show the pilot when high up what the land below him was like, would at any rate give him a few seconds' warning of what he was going to run into after touching the ground and allow him to brace himself to the shock; and at a height of fifty or sixty feet would even show the character of ground on which he was going to land. Also it should show tree-tops in time to avoid them.

Fitting an adequate light under the body adds very considerably to head-resistance and slows the machine several miles an hour. Also, oil covers the glass and decreases the power of the light. It therefore seems advisable to fit the light inside the fuselage, the glass forming a clean joint with the breast of the body. Over the glass should be a sliding shield to keep it clear of oil, and this shield should be made so as to spring back when the pilot switches on the light.

An air-speed indicator—of the Ogilvie type—with an illuminated dial will show the pilot whether he is diving or climbing too steeply, and a clinometer fixed crosswise on the machine, and likewise illuminated, will show whether the lateral balance is being maintained correctly. I have not heard whether Mr. Ogilvie has succeeded in illuminating his famous piece of string for night-work, so as to show whether the machine is taking the correct bank on a turn, or is yawing off its course, but something might be done with luminous paint in this direction. Luminous paint would have the added advantage that it would not dazzle the pilot as does even the reflection from the little shielded lights of an instrument-board.

Some time ago I was shown a kind of weather-vane working vertically as well as horizontally and intended to fulfil the purposes of Mr. Ogilvie's string. This vane operated a dial, which could be illuminated for night-flying, and should be very useful just at present. I cannot now remember who was the inventor, and if this happens to meet his eye he will be doing me a favour if he will communicate with me.

Naturally, when actually landing, the instrument lights would be switched off and the head-light switched on, so that the pilot would have a dead black mass of the machine in front of him to show him

clearly the rise and fall of the aeroplane against the illuminated ground in front. Modern electric head-lights are so powerful that the pilot would be able to see quite well any object a couple of hundred yards ahead, and so the danger of a serious smash on landing would be reduced to an outside chance.

The great thing for pilots to remember when landing under these circumstances is that the crew can almost always be saved if the pilot makes up his mind to smash the machine. For example, if a landing is attempted on what appears to be nice open country, and just as the machine has slowed down and is almost touching the ground a stone wall appears ahead, there is a great temptation to open up the engine and to try and jump the wall. This will probably mean stalling the machine and a dive from 30 or 40 feet, with probable death and certain injuries to the crew. Or it may mean hitting the wall with the chassis and a crumpled mass under the engine—assuming the machine to be a gun-carrying "pusher"—at the other side of the wall. On the other hand, a wrench with tail and ailerons to one side merely results in wiping off the chassis and probably smashing the wings on one side and the tail-booms, which is much cheaper than the other alternatives.

One should never forget that M. Hélén smashed a Nieuport nineteen times in succession—and repaired it himself every time—in learning how to land properly on a wing-tip. Finally he reduced such landings to a fine art, and was able to get down on one occasion into a wee field about the size of a tennis-court—and that on a heavily loaded 80-mile-an-hour monoplane.

The most fatal mistake would be to tell off a number of keen young officers for anti-aircraft defence and allow them to go up in the dark for the first time when an attack actually takes place. Not only would they be far less effective in their attack on the enemy, but many of them would certainly be injured in descending, or even in starting; whereas by giving them plenty of training, in small doses at a time, on aeroplanes properly fitted up for the work, they would run very little risk, they would gain confidence, they would acquire very valuable experience, and they would become much more valuable as ordinary pilots by reason of that experience.

Regular drill and organisation accustom one to anything. An old foolishly-wise saying states that "eels get used to being skinned." By force of custom night-flying certainly loses its terrors and, in consequence, its risks. "Let everything be done decently and in order," as the Prayer-book says. The Squadron-Commander whose officers and men are trained to do everything by numbers is a wiser man than he who believes that "it is all done by kindness," or he who tries to run a squadron by barking at it. By the way! Have you heard of the most highly disciplined battalion of Kitchener's Army? The battalion was on parade the other day when the colonel's dog ran out and barked twice—and the regiment promptly formed fours.

Flying in the dark after hostile aircraft should not, at this date, be regarded as a species of forlorn hope, but rather as a regular part of a pilot's "post-graduate" education; for the time is not far distant—after the war is over—when any long cross-country journey for the purpose of ordinary passenger conveyance will be made chiefly in the dark, just because the air is steadier during the night.—C. G. G.

### A New Market.

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### Deliveries of "The Aeroplane."

Complaints as to the difficulties of obtaining THE AEROPLANE by first newspaper delivery on Thursday mornings still continue to come in, particularly from the West and North-West of England. The Manager will be very greatly obliged if readers who experience such difficulty will communicate with him at once, at 166, Piccadilly, W., describing the circumstances.

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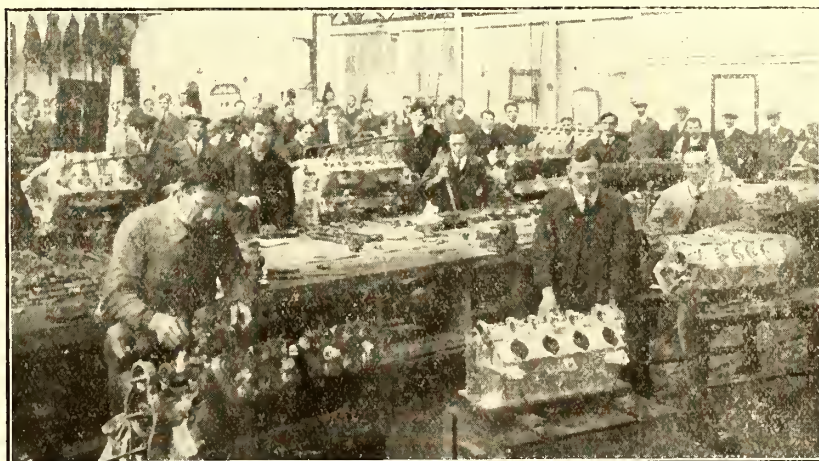


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## Naval and Military Aeronautics.

### GREAT BRITAIN.

From the "London Gazette," January 26th, 1915.

WAR OFFICE, January 26th.

REGULAR FORCES.—Establishments.—Royal Flying Corps (Military Wing).—The undermentioned appointments are made:—Flying Officers to be Flight Commanders. Dated January 15th, 1915: Lieutenant R. O. Abercromby, the Gordon Highlanders, and to be temporary captain; Lieutenant W. G. S. Mitchell, the Highland Light Infantry, and to be temporary captain; and Captain J. R. C. Heathcote, the Queen's Own Cameron Highlanders.

Flying Officer.—Captain T. W. C. Carthew, 4th Battalion the Bedfordshire Regiment, and to be seconded. Dated January 1st, 1915.

SUPPLEMENTARY TO REGULAR UNITS OR CORPS.—Royal Flying Corps (Military Wing).—Second Lieutenant (on probation) George C. N. Nicholson is confirmed in his rank.

A Supplement to the "London Gazette" of January 26th, published on January 27th, contains the following military appointments:—

WAR OFFICE, January 27th.

REGULAR FORCES.—Establishments.—Royal Flying Corps.—The undermentioned appointments are made:—

CENTRAL FLYING SCHOOL.—Instructor—Lieutenant (temporary Captain) H. Le M. Brock, the Royal Warwickshire Regiment, a flight commander, Military Wing, vice Captain D. Le G. Pitcher, 39th King George's Own Central India Horse, Indian Army. Dated January 22nd, 1915.

MILITARY WING.—Flying Officer.—Second Lieutenant Harold Blackburn, Special Reserve. Dated August 29th, 1914.

A Second Supplement to the "London Gazette" of January 26th, published on January 28th, contains the following military appointment:—

WAR OFFICE, January 28th.

REGULAR FORCES.—Establishments.—Royal Flying Corps (Central Flying School).—The undermentioned appointment is made:—

Instructor—Lieutenant (temporary Captain) Lord G. Wellesley, Grenadier Guards, a flight commander, Military Wing, vice Captain G. B. Stopford, Royal Artillery. Dated December 19th, 1914.

From the "London Gazette," January 29th, 1915.

WAR OFFICE, January 29th.

REGULAR FORCES.—Establishments.—Royal Flying Corps (Military Wing).—The undermentioned appointment is made:—Flying Officer—Lieutenant D. Corbett-Wilson, Special Reserve. Dated October 9th, 1914.

A Supplement to the "London Gazette" of January 29, published on February 1st, contains the following military appointments:—

WAR OFFICE, February 1st.

REGULAR FORCES.—Establishments.—Royal Flying Corps (Military Wing).—Wing Commander: Brevet Major (temporary Lieutenant-Colonel) F. H. Sykes, 15th (the King's) Hussars, a General Staff Officer, first grade, and to be temporary colonel whilst employed as Second in Command of the Royal Flying Corps. Dated December 21st, 1914.

Flying Officer: Second Lieutenant M. McB. Bell-Irving, Special Reserve. Dated December 29th, 1914.

SUPPLEMENTARY TO REGULAR UNITS OR CORPS.—Royal Flying Corps (Military Wing).—The undermentioned temporary second lieutenants to be second lieutenants. Dated January 1st, 1915: F. W. Polehampton, from 14th Reserve Regiment of Cavalry; E. G. S. Walker, from 6th (Service) Battalion the Border Regiment.

The undermentioned to be second lieutenants (on probation): Stanislaus Cruess Callaghan. Dated January 15th, 1915.

William Arthur Grattan Bellew. Dated January 17th, 1915.  
Vyvyan Arthur Hemming Robeson. Dated January 18th, 1915.  
Dated January 25th, 1915: Montague Vivian Morgan, Frank Jolly, Alan Mushet Morison, and Thomas E. Robertson.

### NAVAL.

The following appointment was made at the Admiralty on January 28th:—

A. G. Evans, M.B., to the "Pembroke III," for Royal Naval Air Service, to date January 27th.

The following appointments were made at the Admiralty on January 29th:—

The undermentioned have been entered as probationary flight sub-lieutenants, with seniority January 28th, and appointed to the "Pembroke III," for Royal Naval Air Service: C. Tolle-mache, M. Hood, W. H. Dunn, and L. H. Foster Irving.

The following appointment was made at the Admiralty on January 30th:—

Chief Petty Officer H. R. Hopperton has been promoted to the rank of probationary flight sub-lieutenant, with seniority January 15th, and appointed to the "Pembroke III," for Royal Naval Air Service.

The following appointment was made at the Admiralty on February 1st:—Temporary Surgeon, W. L. Anderson, M.B., to the "Pembroke III," for Royal Naval Air Service, to date January 31st.

The Secretary of the Admiralty makes the following announcement:—

The Naval General Staff, Petrograd, communicate the following:—On Monday morning a Zeppelin appeared above Libau and had time to drop nine bombs on the undefended part of the town, and after being fired at by the forts the Zeppelin fell into the water. Small craft were sent out and destroyed the Zeppelin and took the crew prisoners. [The vessel has since proved to be a Parseval.—Ed.]

One hears indirectly that in the raid on Dunkirk on January 10th by German aeroplanes, of which it was reported in the daily papers that they were put to flight by Belgian and French aeroplanes, the defence of Dunkirk, was in fact, undertaken by a solitary British aeroplane belonging to the Royal Naval Air Service, the others presumably being out on reconnaissance elsewhere. The crew of this machine tackled seven Germans and was at one time actually engaged with three of them at once. Only one of them showed any real fight, but it was faster than the British machine and eventually got away after being hit in several places.

A man on one of the destroyers which took part in the action in which the "Blücher" was sunk writes:—"We lowered one of our own whalers and were proceeding to pick up some of the enemy when one of their aeroplanes appeared in the sky and commenced to drop bombs upon us. They fell in all directions, some in front and some behind. With our winged 'pal' (a damaged British destroyer) we commenced to steam away, and our whaler's crew had a truly miraculous escape; yet, in spite of the aeroplane, we rescued one of the enemy. I said to him, 'You won't fight any more.' In reply he said: 'Very good; your English very good. Thank you. I have an aunt at Tottenham.'"

[One would judge from this that the aeroplane's crew were under the impression that our destroyers were picking up men from a sunken British ship, though, of course, in purely scientific war it might be policy to destroy or damage an enemy ship even when it was engaged in picking up one's own men, much as on land one shells a building held by the enemy although one knows it contains prisoners and wounded of one's own.—Ed.]

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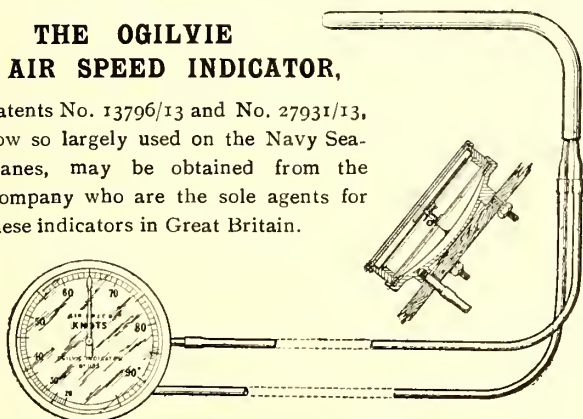
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One of the crew of a ship in the same action writes:—"While the rescue work was in progress a Zeppelin appeared, but dropped no bombs, paying great respect to those vessels that were equipped with anti-aircraft guns."

[This should be compared with the paragraph above which mentions an aeroplane. Possibly both were present.—Ed.]

\* \* \*

The following extract is from a story told by, not to, a Marine, who was in the same Naval action:—"One of our cruisers went after a Zeppelin that had been witnessing the fight, and brought it down splendidly." [Apparently Admiral Beatty forgot to mention the matter.—Ed.]

#### MILITARY.

The following passages in the descriptive account which has been communicated by an Eye-Witness present with General Headquarters continuing and supplementing the narrative published on the 25th ult. of the movements of the British Force, deal with aircraft:—

January 23rd.

On Tuesday, the 19th, the chief event was a successful aerial raid carried out by us against Ghisteltes, some 12 miles to the west of Bruges. In spite of very misty weather and a certain amount of wind our aeroplanes reached their destination about dawn, and flying very low dropped several bombs on certain sheds which formed their objective. Exactly what damage was done it is not possible to state, but it is known to have been considerable.

Friday, the 22nd, was sunny, with some frost and not much wind; in fact, as perfect a day for aviation as can be expected at this time of year; and the Germans took advantage of the weather to make an aerial raid on a large scale against Dunkirk. The details are as follows:—

One of our aeroplanes—a single-seater—was on patrol duty, when the observer saw several hostile machines approaching. He at once gave chase to the first hostile machine and opened fire on it. Meanwhile two other British machines started from the ground. It took them some little time to ascend the height of 6,000 feet at which the action in the air was proceeding, during which the British machine which had been on patrol had succeeded in driving off with its fire the two leading German machines. Ten others, however, had come up by the time that the three British machines were all in action. After the Germans had dropped several bombs over the harbour and town the whole turned and flew back towards their lines. Our aeroplanes pursued and brought down one German machine by a bullet through one of its cylinders. The aeroplane was captured, together with its pilot and observer and eight unexploded bombs. The observer was armed with a double-barrelled pistol for firing chain shot. In face of the heavy odds against them this feat on the part of our aviators was distinctly meritorious. The damage done by the raiders was slight.

[This, of course, refers to the incident reported last week, the officers concerned being Capt. Holt (on a Martinsyde scout) and Capt. Mills and Lieut. Morgan, whose mounts were not mentioned by our informant.—Ed.]

\* \* \*

The following passage in the descriptive account which has been communicated by an Eye-Witness present with General Headquarters, continuing and supplementing the narrative published on the 28th ult., of the movement of the British Forces and the French Armies in immediate touch with it, deals with aircraft:—

January 27th.

On Saturday, the 23rd . . . on the right, in the neighbourhood of the La Bassée Canal . . . our guns also forced an observation balloon to descend, and drove off two German aeroplanes. A new type of machine approached our lines. Its novel shape evidently misled the German gunners, for on its return they opened fire on it until it signalled its identity by star-lights.

\* \* \*

The obituary column of the "Morning Post" for January 30th contained the following:—

CRAWFORD-KEHRMANN.—Killed in action, on January

24th, near Armentières, Lieut. J. Crawford-Kehrmann, 3rd Batt. Rifle Brigade, aged 28 years, elder son of Mr. L. and Mrs. Crawford-Kehrmann.

Lieutenant Jessel Crawford-Kehrmann was born at Durban, South Africa, on September 16th, 1886. He took his B.Sc. degree with honours at Manchester University in 1911, and obtained his commission in the 5th Batt. the Rifle Brigade in 1912.

He learned to fly at the Bristol School at Brooklands, taking his certificate on a Bristol biplane on February 18th, 1913.

\* \* \*

The following obituary notice appeared in the "Times":—

KEATING.—On the 20th January. Killed. Harry Sheehy Keating, Irish Guards, only son of the late H. S. Keating, grandson of the late Rt. Hon. Sir Henry Keating, and beloved grandson of Lady Ward, 16, Cadogan Gardens.

Harry Sheehy Keating was a young Irish sportsman of a type which is only too scarce. He had lived for some years in America and there learned to fly, his certificate being No. 262 on the American list. When, after the death of Mr. Hamel, Mr. Mackay Edgar gave up the idea of financing the trans-Atlantic flight, Mr. Keating took up the project, intending to pilot the machine himself as well as paying the costs of the journey. Accompanied by Mr. Whittaker, who had worked out Mr. Hamel's scheme, Mr. Keating visited Germany to investigate the problems of long-distance flying, as the Germans had done so much in this direction. It was only with great good luck that Mr. Keating and his companion managed to get out of Germany actually after war had been declared.

On returning to England Mr. Keating was appointed on probation to the Royal Flying Corps, but shortly afterwards transferred to the Irish Guards, and it was while serving with this regiment that he was killed. In him the King has lost a promising young officer, aviation has lost a valuable supporter, and many of us have lost a good friend.

\* \* \*

The Casualty List published on January 28th includes the following:—

#### THE EAST COAST AIR RAID.

The following casualty is reported from Great Yarmouth, January 19th:—Wounded: Poulton, 1269 Private A. J., Essex Regiment.

[This is the first service casualty caused by hostile aircraft in the British Isles.—Ed.]

\* \* \*

The funeral of Captain Esmé Fairfax Chinnery, Coldstream Guards and Royal Flying Corps, who was killed by a fall in an aeroplane near Issy on January 18th, took place with full military honours at Hatchford Churchyard, Cobham, on Saturday, January 30th. The firing party was supplied by the Royal Flying Corps and the Last Post was sounded by two buglers. The service in the church was conducted by the Rev. L. H. Wellesley Wesley, a former vicar of Hatchford, assisted by the Rev. H. P. B. Chubb, vicar. Among those present at the funeral were Mrs. Christopher Stone (mother), Lieutenant Christopher Stone (step-father), Lieutenant H. Broderick Chinnery, Miss Felicité Chinnery, Miss Ethel Chinnery, Sir Guy Fleetwood-Wilson, Sir Henry Samuelson and Lady Samuelson, Major Mathieson (Coldstream Guards), Captain Lord George Wellesley, Major Burch, Major Carden, and Lieutenant Pryce (Royal Flying Corps).

\* \* \*

Brigadier-General English was seriously injured in an accident to a military biplane near Parkhurst, Isle of Wight, on January 27th. The machine, which was piloted by Lieut. Thompson, was starting, and it is reported that a wing collapsed near the ground, and the machine overturned. General English was held in the wreck and sustained a fractured thigh, a cut hand, and a severe shaking. He was removed to the Military Hospital, Parkhurst. The pilot escaped with slight injuries.

\* \* \*

An engagement is announced between Major J. H. W. Becke, Sherwood Foresters and of the Royal Flying Corps,

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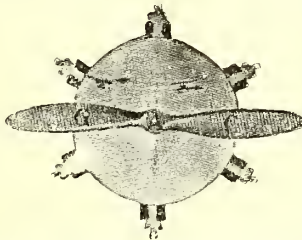
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eldest son of the late the Rev. J. H. Becke, Beckingham, Lincoln, and Annie Peto, only daughter of Mr. and Mrs. Adamson, Careston Castle, Forfarshire. Major Becke will be remembered as one of the best fliers of No. 2 Squadron at Montrose, where he made numerous long and high flights. He undertook the formation of No. 6 Squadron at Farnborough early last year, and has done distinguished work on active service.

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An infantry subaltern, writing home from France, says:—"Rather exciting here this morning. A German Taube came round on a tour of inspection and our guns started potting at it—must have fired about 50 shells without doing any damage. She sailed round the town about four times and all round her our shrapnel was bursting in little puffs of smoke. She then dropped some star shells to show our position and cleared off. About an hour later the German gunners began to shell the village; one shell went through the top storey of Brigade Headquarters and another made a big hole in the garden behind our mess. We were being lectured by the C.O. in the orderly room and one or two whistled overhead. However, they did not keep it up long and no damage was done."

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An artillery officer, writing from the war area, says:—"Aero-planes are the principal danger, but the moment one is seen by the look-out man he sounds a shrill blast on his whistle; everybody remains stock still without looking up until two blasts are sounded when it is known that either he has gone or that it was one of the Allies' aircraft.

"The Germans are as cunning as monkeys. They will fly over you making a colossal row, the black crosses painted on their wings plainly visible. They pretend to have missed you; but they just mount higher and higher, and return as quietly as possible, volplaning down as near as they dare without a sound, and taking everything in. Then, of course, they signal their

gunners, and Jack Johnsons begin to come over groping for you like a great blindfolded giant. You can hear the shell coming, buzzing like a lop-sided top, nearer and nearer—then plop! into the willow patch on the right of us. They had not got our line, so we breathed easier again."

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An erstwhile habitué of Hendon, now an N.C.O. in the R.A.M.C. (T.), writing from Northern France, says:—

"We are billeted in a wheelwright's workshop in a village a few miles behind the firing line, having a rest before we seriously get to work. We see nothing but aeroplanes all day. In fact, on a fine morning the air looks like dear old Hendon on a Saturday afternoon in the palmy days. The machines (the English ones), at least those we have seen, are B.E.s, Avros, Sopwiths and Blériots, and another 'bus which is like a large Caudron with a single rudder. It seems a rather slow 'bus, but climbs like the deuce. The B.E.s seem to be the ordinary old type; in fact, there seems to be rather a dearth of 'tabloids' about this particular spot.

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Apparently in the Flanders war area the Royal Naval Air Service and the Royal Flying Corps are working together quite amicably, and the emulation between the two Services seems to produce quite good effects. Also one hears rather more of the doing of the aviators in the Dunkirk section, probably because Dunkirk is more closely in touch with this part of the world than the portion of the line farther inland, and possibly because the R.F.C. detachment in the district is not so much confined to the regular routine of reconnaissance and fire control as the rest of the Corps. This routine work is, of course, of the very highest value to the army as a whole, and will, one hopes, bring honour and promotion to the officers who do well, though it does not offer so many opportunities for individual distinction as does defence work against overwhelming numbers of enemy aircraft.

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Paris, January 30th.

The following passage in the official account covering the principal events in the war from the morning of January 16th down to the evening of January 26th refers to aircraft:—

Notwithstanding unfavourable atmospheric conditions our aeroplanes regularly undertake reconnoitring duties, and frequently give chase to German aircraft. On several occasions the chase was successful.

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The Paris correspondent of the "Morning Post" who has visited the Eastern section of the French war area writes:—

"The German heavy guns appear to have been considerably handicapped by want of aeroplanes at the beginning of hostilities. During the first month or six weeks they were rarely seen, and consequently the fire of the guns was mainly directed by the map. Since then matters have changed. A day rarely passes when two or three German aeroplanes are not seen



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above the French lines. On Friday I saw an Aviatik flying at a great height, some 7,000 or 8,000 feet up, over St. Nicholas. A few shots were fired at it, but it treated them with contempt, and had not even a bomb to spare for the three military automobiles which were conveying the party of journalists. It was probably this same biplane which that afternoon dropped several bombs on Lunéville. The inhabitants of that town are so accustomed to this form of entertainment that they scarcely deign to notice it. A lady there assured me that she had grown so accustomed to such explosions that they scarcely made her jump. 'Really,' she said, 'we are so accustomed to them that they scarcely startle us more than the iron shutters which the tradesmen pull down with such a horrid noise every night. After enduring a German occupation nothing else counts.' "

[This is interesting. At first the main force of German aeroplanes were evidently operating with the German main attack through Belgium, and did not trouble about the feint through Alsace. Now they are seen constantly in Lorraine, which suggests either that the Germans have more aeroplanes to spare, which is very probable, or that they expect the Allies' main attack to be delivered through Lorraine, and are endeavouring to anticipate it. If this be so it probably accounts for the scarcity of German aircraft in the North, the weakness being masked by the raids in force over Dunkirk, which are intended to give an impression of their having plenty of machines to spare.—Ed.]

\* \* \*

Reuter's correspondent in Paris says that the French dirigible "Asura," one of the largest type, left its shed at Issy-les-Moulineaux on the morning of the 29th and manœuvred for some time over Paris. [This is probably one of the new 900-h.p. Astras. Her performances will be watched with interest, as she should be at least as fast as a Zeppelin and able to rise higher.—Ed.]

\* \* \*

The special correspondent of the "Times" reports that another attack was made by aeroplanes on Dunkirk on the evening of the 28th ult. :—"On former occasions, when they have attacked in the light of day, they have found the town prepared for them, and all the resources of artillery and aeroplanes have been ready to repel them. On this occasion they attacked by moonlight, hoping thus to approach the town unobserved. An aeroplane had made a test flight over the town on Wednesday evening and had succeeded in returning safely to the aerodrome at Ghisteltes.

"On Thursday evening four or five aircraft attacked the town. It was a clear, moonlight night, but the first indication of their approach was the whirr of their engines. It was at first supposed that they were French airmen returning from an expedition, but the explosion of a bomb quickly destroyed the illusion. Anti-aircraft guns were quickly in action, and the sky was illumined with the flash of bursting shrapnel. The tocsin was sounded, the shops were closed, and in a few seconds the streets were deserted. Only a few officers remained in the streets to watch the progress of the fight."

\* \* \*

The newspapers report from Nancy that a German aeroplane flew over the town on January 31st dropping bombs and arrows. The bombs did no serious damage, but one fell in a schoolyard and slightly wounded a child. Aeroplanes also visited Pont-à-Mousson and Lunéville, and a man was killed at the former place. One of the two machines which flew over Lunéville had its petrol tank pierced by a bullet, and was compelled to land near Vathimenel. The other escaped into Alsace. On Friday a German aeroplane dropped bombs on Remiremont. One fell in front of an infants' school, but nobody was injured.

\* \* \*

His many friends will be glad to hear that M. Louis Noel has now been promoted from Caporal-Aviateur to Sergeant-Aviateur, a well merited reward for his strenuous services.

\* \* \*

A telegram to the Paris "Excelsior" from Dunkirk says that four boys have been killed by a bomb dropped by one of the German aeroplanes. The boys picked up the bomb, which went off while they were examining it.

## GERMANY.

A report issued by the German Wireless Press Bureau states: "Main Headquarters reports this afternoon (Friday, January 29th) as follows:—In the Western theatre of the war during a night expedition of one of our squadrons of aeroplanes the English provision establishments of the fortress of Dunkirk were attacked. Many bombs were dropped."

\* \* \*

It was reported from Amsterdam on January 27th that, according to the Berlin papers, a collision between two aeroplanes took place in the air above the flying ground at Johannisthal on the 26th, resulting in the death of three aviators, among them being two officers. Evidently reports of fatalities at German flying grounds are not being reported regularly in the German papers, for, in peace time, Johannisthal alone averaged nearly a death a week, and since the outbreak of war, when presumably accidents are more frequent owing to hurried tuition and increased numbers, hardly any accidents have been reported.

\* \* \*

A Reuter message from Amsterdam quotes the following Berlin statement:—"The German Parseval airship which flew over Libau on January 25th did not return."

[It is interesting to note the Germans allege the aircraft which came to grief at Libau was a Parseval and not a Zeppelin. This seems very likely indeed in view of the smallness of the crew (seven in all), and the No. 19 mentioned in the Russian report.—Ed.]

\* \* \*

A newspaper correspondent at Geneva reported on February 1st that after removing the aeroplanes and machinery from the Aviatik factory at Mulhouse, the Germans have blown up the building rather than allow it to become the victim of aerial attacks on the part of the Allies.

[Readers will remember that the personnel and material of the Aviatik works were removed east of the Rhine very early in the war.—Ed.]

The correspondent continues:—"The Germans are now seeking skilled mechanics in Switzerland for employment in the Zeppelin sheds at Friedrichshafen, where work is still going on night and day. Especially high rates of pay are offered."

## RUSSIA.

The following account of the Zeppelin raid on Libau is sent by Reuter from Petrograd:—

"At ten o'clock on Monday morning Zeppelin No. 19 appeared over the town and dropped several bombs. It then turned away with the intention of making off towards the south, but was hit by the Russian guns and fell into the water about a mile from the shore near Sernaton. A number of Russian vessels at once rushed out upon the enemy and began a furious bombardment of the Zeppelin. The fight, however, was of short duration, and after having replied with a few rifle shots the crew of the Zeppelin, consisting of a captain, three officers, and three sailors, gave themselves up. An attempt was made to take the Zeppelin in tow, but this was found impossible, and the dirigible was accordingly destroyed."

[L.Z. 19 (Zeppelin ship number) was Ersatz Z.I. in the military series, and was wrecked in June last. On the other hand, L.Z. 25 was the military Z. IX., and was turned out in July last, so that if a Z. XIX. existed it would indicate ten new Army Zeppelins, apart from those taken over by the Navy, all built since July, which is scarcely humanly possible.—Ed.]

\* \* \*

The "Times" special correspondent at Warsaw reports that about 3 o'clock in the afternoon of January 26th a German Taube flew majestically over the main street of the town and was evidently making a reconnaissance when a Russian biplane rose to engage it, and for 30 minutes the inhabitants watched the two machines at a height of 3,000 ft. above the main thoroughfares manœuvring around each other and exchanging shots. The Russian aviator attempted to lure the German outside the town, where the Russian batteries might fire without fear of their shells falling into Warsaw. The German declined to be enticed, however, and, after as fine an exhibition of flying as has ever been witnessed, the Taube gained a high level and departed westward.

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**DENMARK.**

It was reported from Copenhagen on January 29th:—"Since the submarine attack on the German cruiser 'Gazelle' in the Baltic a few days ago reconnaissances have been daily made over these waters by German airships. Airships are observed every day, from the southern Danish islands, travelling eastwards. One of the aircraft seen was a dirigible of new shape, entirely different from Zeppelins of the ordinary type."

[Photographs published in the daily press last week show an airship over Danish waters which appears to be a Parseval, or possibly a Gross, with the car built very close up to the envelope, so that it looks almost like a Forlanini.—Ed.]

**SWITZERLAND.**

The "Daily Chronicle" Zeppelin expert telegraphs:—"Geneva, January 27th.—The newest Zeppelin left Friedrichshafen this morning. It is stated that Count Zeppelin was aboard for the purpose of saluting the Kaiser on his birthday, after which he will join the North Sea Zeppelin Fleet."

[There is something quite Shakespearean in "the newest Zeppelin." It reminds one of "the most unkindest cut of all"! Another account calls it "the latest and strongest."—Ed.]

**HOLLAND.**

The Amsterdam correspondent of the "Times," writing on January 22nd, says:—

"The affront put upon Holland by the passage over her territory of the German airships has thrown a serious strain on the determination of the country to remain neutral. It is not, however, to be expected that this strain will prove over-great. The incident will be closed with diplomatic explanations. Neither the Government nor the people of the Netherlands will have any belief in those explanations, or will ever be brought in their hearts to regard the action of the German airships as anything else than a gross and deliberate discourtesy indicative of a contempt for the feelings of Holland not easy to bear. But it will be borne, because much larger considerations compel the Netherlands to maintain its neutrality almost at whatever cost.

[For instance, the supply of corn, copper, and petrol to Germany?—Ed.]

**MEXICO.**

A Reuter message from Washington says that aeroplane raids, with the dropping of bombs, will be conducted against Mexico City, according to advices to the Carranza Agency from Vera Cruz, which says that General Villa's army has joined General Obregon's for a march on Mexico City.

[Not a very original story. Reuter plus Carranza ought to be capable of something better. And, besides, who cares about Mexico?—Ed.]

**SOUTH-WEST AFRICA.**

A trooper in the South African Light Horse in German territory writes:—"I think the aeroplanes are our worst trouble, though I fancy they have not more than two; but they visit us every morning and chuck bombs at us. We, of course, have nothing to reach them. This morning they accounted for eleven men with one bomb."

**U. S. A.**

In a letter to the "New York Herald" (Paris edition), Mr. Morel, the American Consular Agent, thus describes the German raid on Dunkirk:—"One of the eighty bombs dropped on Dunkirk last Friday fell two metres in front of my house, killing or seriously wounding several persons. I and my son, who were entering the house at the moment, had a narrow escape from death. I am, however, only slightly wounded in the head by fragments of glass."

[This is inserted under U.S.A. partly because the Consulate is theoretically American soil, and partly because it might escape notice in a mass of French news, but chiefly for the sake of making the inevitable remark that bomb-dropping is generally considered worth while because of its more effect. This may save us from receiving the same alleged jest from some thousands of readers.—Ed.]

**EGYPT.**

The "Times" reports that a British seaplane has dropped bombs on the Turkish column at Bir Muhadet, inflicting losses. This shows that the Turkish advance has begun, and the indications are that the invaders are taking the coast road.

\* \* \*

It was reported from Alexandria on January 29th that on the 28th an aeroplane reconnoitred, and found the enemy to be withdrawing from his advanced posts.

\* \* \*

Mr. Hugh Martin, the "News and Leader" correspondent at Cairo, wired on January 31st as follows:—"An unfortunate affair is reported from a point on the Canal which I am not at liberty to mention. A French pilot and British observer on a French waterplane met with an accident outside our lines, and were returning on foot by night when they were fired on by our patrols, who took them for the enemy. Both were killed." [Possibly this is merely a mangled version of the adventure of Capt. Stirling, D.S.O., and M. Grall. At any rate one hopes so.—Ed.]

\* \* \*

Apropos the recent adventure of Captain Stirling and Seaman-aviator Grall in the Sinai Peninsula. A friend of THE AEROPLANE in Egypt kindly sends a copy of "La Bourse Egyptienne," containing a full account of the adventure given in a communiqué issued by the Press Bureau, which is under the control of the Minister of the Interior. Egypt, unlike Great Britain, is to be congratulated on her Press Bureau and her Home Secretary, for the account, which is too long to translate in full, is excellently written and contains many interesting details. Captain W. F. Stirling, D.S.O., is an officer of the Royal Dublin Fusiliers, and was on retired pay till the war broke out. He and the pilot Grall left the "Minerva" at 9.45 a.m. on a Nieuport hydro-aeroplane to reconnoitre inland along the Wadi Araba, which runs from the Gulf of Akaba to the Dead Sea, starting definitely inland at 10.5 a.m., at 2,500 feet, the engine running at 1,160 revs. per minute. They turned at 10.45, assisted on their homeward journey by a North wind. A quarter of an hour from home, according to the account, "the helix sang less strongly," and the engine stopped. They were then at 4,700 ft. Grall brought the machine head to wind, to slow her speed over the ground, but when low down found there was no wind, so the speed increased. The floats touched the sand and carried away, and the machine stood on her head. Grall was thrown out, tucked in his head and fell on his back. Captain Stirling was pinned in the machine with "his face and chest in the sand, and his legs forced back above his head, the petrol running out of the tank into his hair and mouth." Captain Stirling, "to his joy, heard Grall spitting out sand," so assumed that he was alive, and he was finally liberated by Grall freeing his entangled legs through the trap-door in the side of the fuselage. (This seems to indicate a new type Nieuport with the passenger in front.)

It was then 11.15 a.m., and they had 18 or 20 miles to go through hostile country. So at 11.20 they started, leaving the machine "with its tricolour rudder still waving proudly in the air." At 3.15 p.m. Grall caved in, and Captain Stirling went on alone, leaving his water-bottle with Grall, and reached the sea after many adventures at 7.15 p.m. At 8 p.m. he was picked up by the "Minerva's" searchlights and taken aboard. Grall reached the coast late at night, and at 6 a.m. awoke and looked for the ship. A search party went inland to find him, but naturally failed to do so, and finally he was discovered by the searchlight at midnight, having been without food since the morning of the day before. The complete account is full of thrills and humorous touches, as the quotations show, as well as information. Can one imagine our own Press Bureau doing anything half as good? Incidentally the details indicate, as surmised from the first account, that the pilot had not acquired the art of pancaking at a stand-still. Seeing that the machine was a Nieuport, Mr. Hélén's famous wing-tip trick might have been even more useful.

**The Flying Services Fund.**

The amount received to date for the above fund is £5,587 8s., and for last week the sum subscribed was £803 16s.

Small subscriptions would be much appreciated. Anyone who wishes can have one of the special lists for the collection of subscriptions on application to the Secretary, Royal Aero Club, 166, Piccadilly, W.

**The R.N.A.S. Comforts Fund.**

The cash contributions to the R.N.A.S. Comforts Fund show a satisfactory increase during the past week, the amounts being:—Comm. R. Newton, R.N., £5 5s.; Mrs. Morrison Bell, £5; Mrs. and Miss Brancker, £5; Employees White and Thompson, Ltd., £3 15s.; Mrs. C. Macdonald, £3 3s.; Miss Gillson, £3 3s.; Miss F. Watson, £2 2s.; Miss Lever, £2 2s.; Miss Alice Lever, £2 2s.; W. G. Leete, £1 1s.; Miss Dunn, £1; Mr. F. Love, £1; Miss de Castro, 10s.; H. de Cruz Carus, 10s.; Tom Milner, 10s.; Aero Workers, Vickers, Ltd. (12th contribution), 8s. 6d.; Woodworkers, Vickers, Ltd. (7th contribution), 6s.; Miss G. Sprules, 5s.; total for week, £37 2s. 6d.; total to date, £705 16s.

The supply of socks and mufflers is well maintained, but there is a marked shortage of sweaters, cardigans, jerseys, and underwear. These are urgently needed for the crews of the seaplane-carrying ships, and as underwear especially has to be bought, as it cannot be made by amateur workers, further cash contributions are needed.

It is a long time since some of the aircraft firms engaged on Admiralty work sent any contributions, and it is hoped that these firms will respond handsomely during the present week. Men working on aeroplanes in comfortable workshops are asked to think how they would like to do the same work protected only by a canvas shield on the deck of a ship dodging mines in the North Sea in weather such as we are now having. If every man denied himself his football match or cinema show for one week only, it would be possible to add much to the comforts of the men of the Air Service.

The following is a list of those kindly people who have sent contributions in kind to the R.N.A.S. Time is lacking in which to arrange the names alphabetically, but it will be seen that the gifts have come from all parts of the kingdom. It is hoped that other readers will follow these good examples.

Rev. H. de Watson, Hatfield Heath, Harlow; Mrs. Johnson, Norwich; Mr. Stainton, Wyndham Place, W.; Miss Plumbe, Sheffield; Mr. C. Finnis, Victoria Street, S.W.; Com. and Mrs. Groves (4 consignments), Admiralty; Mrs. Leslie, Lindfield; Mrs. Saunders (2 cons.), Watlington; The Misses Martin (3 cons.), Onslow Gardens, S.W.; Mrs. Holland, Park Street, W.; Mrs. Kellett, Dalton-in-Furness; The Hon. Mrs. Morgan (7 cons.), Radnorshire; Mrs. Sueter, Southsea; Mrs. W. Levy (4 cons.), Lowndes Square, S.W.; Mrs. Montifore, London; Miss Fox, Sevenoaks; Mrs. Kay, Hampstead, N.W.; Mrs. Rolland (2 cons.), Hampstead, N.W.; Mrs. Fitzherbert, Kingswear; Mrs. Kendal (3 cons.), Portland Place; Mrs. C. Maude (4 cons.), Southampton Row, W.C.; Miss Irene Maude, St. George's Square, S.W.; Miss Davidson, Ealing; Miss Booker, Bedford; Mr. Monckton (3 cons.), Westminster, S.W.; Mr. Chapman, Finchley; Miss Auley, Folkestone; Mrs. Birnstingl (2 cons.), Kensington, W.

Miss Wilkinson, Golders Green, N.W.; Mrs. Nicholl, Redhill; Mrs. Gordon England, West Kensington; Mrs. Hetherington (4 cons.), Colchester; Mrs. Volk (5 cons.), Brighton; Miss Harper, Bradford; Mrs. Cox, Draycott Place, S.W.; Miss Disney, Clifton; Mrs. Paines Baker, Beckenham; Mr. C. White, Rugby; Mrs. Ash, London; Mr. C. Booker, Bedford; Miss Hill Bourne, Finchley, N.; Mrs. George England (3 cons.), Walton-on-Thames; Miss Bell (4 cons.), Finchley Road, N.W.; Miss Monkman, Berkhamstead; Mr. Brooks, C.B., Admiralty; Mrs. Brackenbury (4 cons.), London; Mr. Roseveare (3 cons.), Winchester; Mr. Everitt, East Finchley; Miss Bone (4 cons.), Kensington, W.; Mrs. Alec. Clarke (2 cons.), Lanark Villas, W.; Mrs. Percival Barry, Buckingham Gate, S.W.; Mrs. Watson, Hull; Lady Samuel, Maidstone; Mrs. Brouet, Tadcaster; Miss Williams, Stockton-on-Tees; Mrs. Chambers (4 cons.), Finchley, N.

Mrs. and Miss Stocker, Exeter; Mrs. Dean, Sutton; Mrs.

Masterman (7 cons.), Hampstead, N.W.; Mrs. Warneford (5 cons.), Crewe; Mrs. Creagh Osborne, Hossell, Woking; Mrs. Duff (2 cons.), Oxford; Miss Cook, Doncaster; Miss Verney, Clacton-on-Sea; Mrs. Morris; Mrs. Baidler, Edinburgh; Mrs. McLaughlin (3 cons.), Ashley Place, S.W.; Mrs. Reynolds, Ramsgate; Mrs. Schwann (2 cons.), Wimbledon; Mrs. Griffith, S. Norwood; Mrs. King, Southbourne; Mrs. Russell Flint (2 cons.), Bedford Park, W.; Mrs. de Zuceator, St. Peter's Square, W.; Miss Gilzean Reid, 69, Grosvenor Street, W.; Mrs. Warren Vernon (6 cons.), Edinburgh; Mrs. Hall, Thrapston; Mrs. Harkness, Edinburgh; The Navy League (6 cons.), Westminster, S.W.; Miss Dignam, Sheffield; Mr. Dunn, Cunningham Place, N.W.

(To be continued.)

**The Royal Flying Corps Aid Committee.**

The winter on the Continent is not half over yet, and the first batches of garments sent to the R.F.C. must by now be worn out. Further sums for the R.F.C. Aid Fund are required, and it is earnestly hoped that every reader of this paper will send a contribution in cash or kind during the next few days, to Lady Henderson, Chairman of the Committee, at 8, Chesterfield Gardens, S.W.

By permission of Lady Henderson, THE AEROPLANE is able to publish the following letters selected from among the many that have been received by the Committee of the Royal Flying Corps Aid Fund, as showing how much the N.C.Os. and men appreciate the efforts of those at home on their behalf:—

"Please accept the grateful thanks and appreciation for the parcels which we have received, from an Air Mechanic who, you see, has taken the liberty of thanking you personally. The parcels have been most useful, and the warm clothing which has been received has been spoken of times out of number as being splendid, and just what we need, by the A.Ms. of the R.F.C. Great thought and consideration must be used by those who decide what to put in the gift parcels. I have just finished using the shaving soap and tooth paste, which is of the best.—Believe me to be, yours truly and gratefully  
(Signed) C. R."

"My Dear Committee,—I received your excellent gift yesterday. Everything in my parcel is truly useful. I wish to convey to you all, dear people, my deep sense of gratitude for your generosity and kindness in sending me such a lovely gift. We 'British Tommies' of the (Censored) Corps fear no longer the rigours of a hard, cold winter than we do the Germans, when we have such a Committee behind us in Dear Old England.

"Again thanking you for your kindness, I remain,

(Signed) A GRATEFUL TOMMY."

[The Censor who deleted "R.F.C." from a letter to the R.F.C. Aid Committee must have been something of a humorist, or possibly the writer of the letter did it himself by way of a jest with the Censor.—Ed.]

"Dear Madam, To-day everyone of us has been presented with a gift from your Committee, and the first thing that I wish to do is to make use of the pencil and paper which I found in my package, to write and ask you if you would please convey my most humble thanks to your Committee for their very great kindness and sympathetic feeling towards the men with the British Expeditionary Force. I am sure we cannot thank the people at home sufficiently for their kindness towards us in sending out such useful and comforting articles as are contained in the packages, and also for the woollen goods that were distributed to us a few days ago.

"We all know that our Adjutant acknowledges with thanks all the gifts sent out to us, but many like myself feel that our first duty on receipt of such a gift is to thank you and your Committee again for their great kindness towards us.—Believe me to be, yours most obediently,

(Signed) A SQUADRON SERGT.-MAJOR."

IN THE AEROPLANE of January 13th a small list of subscribers was published, among whom the Employés of the Aircraft Factory were mentioned as having given £1 9s. A further sum was also received from "Stores" Royal Aircraft Factory of £2 11s. 6d.



## Aeroplane Design.—(Continued)

BY F. S. BARNWELL.

### First Estimates.

We are now in a position, having been given certain requirements, to make a first estimate of weights, deciding in so doing upon the motor to employ.

The designer is generally required to produce a machine to carry a certain number of people, petrol and oil for so many hours' flight at full power, a certain weight of observing instruments, perhaps some weapons of offence, fully loaded to be able to fly at not less than a certain maximum, and not more than a certain minimum speed, and to climb at not less than a certain minimum rate.

Probably the simplest course to take in this necessarily brief outline of designing methods is to assume we have been given a certain set of conditions and see how we should set about to try to fulfil them. We shall assume, therefore, that we are asked to design a machine to carry two people, pilot and passenger, to fly at 80 m.p.h. maximum and 40 m.p.h. minimum, to climb at 7 feet per second fully loaded, to carry petrol and oil for 4 hours, to have a good range of view downwards for the passenger, to carry a full outfit of instruments, i.e., barograph, compass, map case, watches, engine revolution counter, air speed indicator, inclinometers, etc.

We must, of course, keep everything as small, compact and simple as possible to maintain strength and avoid weight.

To keep the fuselage weight and head resistance as low as possible we shall make it a tandem-seated machine.

As a good downward view is required for the observer, we shall seat him in front of the pilot as far forward as possible.

As the machine must necessarily be of a fair total weight and of fairly light loading to fly at the necessary minimum speed, we shall make it a biplane.

Further, we shall give it sufficient stagger for the observer to be able to see vertically, or nearly vertically, down over the leading edge of the lower aerofoils.

This will probably mean a rather large stagger, so we shall decide on ailerons for lateral control, these having the further advantage over warping that they give much better control power at low speeds (which entails, of course, large values of  $i$ ). Warping is equivalent to increasing the  $i$  value of one aerofoil tip; at slow speeds this may mean no increased lift, as the machine may already be flying with its aerofoils at their attitude for maximum lift, but it will mean increased drift with tendency to spin in the wrong direction. But pulling down an aileron is equivalent to increasing the camber of part of the aerofoil, and, hence, will give increased lift at any value for  $i$ .

We shall make the Body 20 feet long by 2 feet mean depth and breadth, and, therefore, of 90 lbs. weight, the weight decided on before for this particular size.

We must allow 350 lbs. for pilot and passenger in their flying kit, and 20 lbs. for seating them.

The controls, being not dual and being for ailerons, we shall take at the lightest weight, 30 lbs.

For the full kit of instruments called for we must allow 30 lbs.

This gives us a total weight of Body and contents of 510 lbs.

We now come to rather an impasse, as we cannot get weights of Aerofoils, Tail Unit and Landing Gear until we have fixed on the engine, and we should like to know the total weight in order to fix on the engine. So we must make a first choice of an engine, judging from some previous machine.

We know that with the 80 Gnome one can make a tractor biplane to fly at 40 to 78 m.p.h. with 4 hours' fuel and oil, pilot and passenger, and climb at about the rate we require. We shall, therefore, need more power than the 80 Gnome for our machine; but, of course, we want to use as low a power as possible.

Let us try the 80-h.p. Le Rhone. From our weight table for engines we find that total weight for this motor with 4 hours' petrol and oil, tanks, mounting, cowling and propeller will be 726 lbs.

We now have total weight less Aerofoils, Tail Unit and Landing Gear = 1,246 lbs. There remains to fix on wing

form and loading, and thence Wing, Tail Unit, and Landing Gear weights.

The total weight  $W_T$  will be equal to 1,246 lbs. +  $w_G$  +  $(w \times A) + (1/5 w \times A)$  (Fig. 10), where  $w_G$  = weight (1/14  $W_T$ ) of Landing Gear, including Tail Skid,  $w$  = weight of Aerofoils in lbs. per square foot, and  $A$  = total surface of Aerofoils in square feet. The  $1/5 wA$  is, of course, the Tail unit weight.

Further we have that  $w_G = 1/14 W_T$ —

$$\text{Hence, } 13/14 W_T = 1246 + 1.2 wA \quad (1)$$

### ESTIMATE FOR TOTAL WEIGHT ETC FIG. 10

$$\text{Total weight } W_T = 1246 + w_G + wA + \frac{1}{5} wA \text{ (lbs.)}$$

$$\text{Whence } - \frac{13}{14} W_T = 1246 + 1.2 wA \text{ (lbs.) (1)}$$

$$\text{Taking } U_{(min)} = 58 \text{ f.p.s. —}$$

$$\begin{array}{ll} \text{For } \frac{W_T}{A} = 4 \text{ lbs./sq. ft.} & K_{y(max)} = .00119 \\ \text{" " } 4.5 \text{ " "} & \text{" " } .00134 \\ \text{" " } 5.0 \text{ " "} & \text{" " } .00149 \\ \text{" " } 5.5 \text{ " "} & \text{" " } .00164 \end{array} \left\{ \text{For Biplane} \right.$$

$$\text{Taking } U_{(max)} = 120 \text{ f.p.s.}$$

$$\frac{K_y \text{ for } 120 \text{ f.p.s.}}{K_y \text{ for } 58 \text{ f.p.s.}} = \frac{58^2}{120^2} = .233$$

$$\text{Taking } K_y \text{ biplane with Gap} = 10 \text{ Chord \& Stagger} = .4 \text{ Chord}$$

$$K_y \text{ Biplane} = .85 K_y \text{ Monoplane}$$

$$\text{Hence necessary Model Monoplane figs. —}$$

$$\begin{array}{ll} \text{For } \frac{W_T}{A} = 4 \text{ lbs./sq. ft.} & K_y \text{ of } 58 \text{ f.p.s.} = .00140 \\ \text{" " } 4.5 \text{ " "} & \text{" " " " } = .00158 \\ \text{" " } 5.0 \text{ " "} & \text{" " " " } = .00176 \\ \text{" " } 5.5 \text{ " "} & \text{" " " " } = .00193 \end{array}$$

$$K_y \text{ for } 120 \text{ f.p.s.} = .233 \text{ of above values}$$

$$\text{If } K_y \text{ max} = .0015 \text{ loading} = 4.3 \text{ lbs./sq. ft. at } 58 \text{ f.p.s.}$$

$$\text{If } W_T = 1900 \text{ lbs. \& } \frac{W_T}{A} = 4.3 \text{ lbs./sq. ft. then } A = 440 \text{ sq. ft.}$$

$$\text{From Equation } W = .014 \sqrt{A \left( \frac{W_T}{A} - w \right)}$$

$$w = .014 \sqrt{440 (4.3 - w)}$$

$$\text{or } w = .98 \text{ lbs./sq. ft.}$$

$$\& wA = 430 \text{ lbs. (11)}$$

$$\text{Hence from (1) \& (11)}$$

$$\frac{13}{14} W_T = 1246 + (.2 \times 430) \text{ or } W_T = 1900 \text{ lbs.}$$

### Choice of Aerofoil.

Now, for what form of aerofoil to employ and what loading.

The first thing to note is that the machine has to be able to fly at 40 m.p.h., or about 59 f.p.s. So the maximum  $K_y$  value for the aerofoils must be such as to give us lift per square foot at 58 feet per second equal to the total loading per square foot that we shall choose.

This may seem a small margin to allow for obtaining the slow speed, but it must be remembered that at the slow speed, and consequent cabré, or tail-down, attitude of the machine, there will be a certain amount of added lift from the tail and body of the machine, and a slight upward component of propeller pull.

Also we must cut the slow speed as fine as possible to get the greatest possible high speed.

Now, for 4 lbs. per square foot, total loading at 58 feet per second maximum  $K_y$  must be = .00119.

$$\text{For } 4\frac{1}{2} \text{ lbs. max. } K_y \text{ must be } = .00134.$$

$$\text{For } 5 \text{ lbs. max. } K_y \text{ must be } = .00149.$$

$$\text{For } 5\frac{1}{2} \text{ lbs. max. } K_y \text{ must be } = .00164.$$

All these being values for a biplane, of course.

We must now consider our high-speed:—

The high speed is to be 80 m.p.h., or 117 feet per second. Considering it as 120 feet per second we see, of course, that the  $K_y$  values for this speed must be  $\frac{58^2}{120^2}$  of the  $K_y$  values for 58 feet per second, as loading is constant. That is to say:—

$K_y$  at 120 f.p.s. must = .233  $K_y$  at 58 f.p.s.

#### Corresponding Monoplane Values.

We must now, as our machine is a biplane, and our figures for model aerofoils are for single or monoplane form, obtain from our tables for effects of gap and stagger the necessary corresponding monoplane  $K_y$  values. We shall assume that we shall make gap = chord and stagger = about .4 of chord. We shall, therefore, as sufficiently accurate for the present, take that  $K_y$  biplane = .85  $K_y$  monoplane, as it would be about .82 for this gap and no stagger, and we obtain about 4 per cent. increase of efficiency due to the stagger.

That is to say, the necessary biplane  $K_y$ s we have found for different loadings, must be multiplied by 1.18 for monoplane tests. We get then:—

For 4.0 lbs. per sq. ft. loading  $K_y$  max. must be .00140

4.5 " " " " " " .00158

5.0 " " " " " " .00176

5.5 " " " " " " .00193

and  $K_y$  high-speed = .233 of these values as we saw before.

We can now turn to our data sheets for Model Monoplane Aerofoils and fix upon the best form for our case.

We have to pick out that Aerofoil which, having a maximum  $K_y$  of .00140 or over, will give us the highest value for Lift to Drift for a  $K_y$  value = .233 of its maximum value; that is, we must consult the curve of  $K_y$  value, and the curve of Lift to Drift on a base of  $K_y$  value, for all our data sheets, and pick out the best Aerofoil for this case.

We shall assume that we have done this and have found the best Aerofoil form for us to be one which for a maximum  $K_y$  of .0015 gives us, at  $K_y$  = .233 of .0015 (or .00035), a Lift to Drift of 10/1. I quote a mythical Aerofoil.

With this Aerofoil we must have a loading of 4.3 lbs. per square foot.

We must now make a shot at the total weight  $W_T$ , as we shall then be able to get a figure for total Aerofoil Area, thence for Aerofoil weight, thence a figure for total weight, which must be very nearly the same as our guessed weight, or we must guess again with increased wisdom.

We shall guess, then, that the machine is going to weigh, fully loaded, 1,900 lbs., and it will, therefore, need  $\frac{1900}{4.3}$  or 440 square feet of Aerofoil surface at the 4.3 lbs. per square foot total loading.

From our previously determined equation:—

$$w = .014 \sqrt{A} \left( \frac{W_T}{A} - w \right)$$

We get that  $w = .014 \sqrt{440} (4.3 - w)$

whence  $w = .98$  lbs. per sq.ft.

This, then, gives us Aerofoil weight = 430 lbs., and we get that  $\frac{13}{14} W_T = 1762$ , or  $W_T = 1900$  lbs.; of this, Tail unit weight is 86 lbs., Landing Gear weight = 136 lbs., and of this, again, 7 lbs. is Tail Skid.

This is our guessed weight (I admit that I guessed once or twice in getting out these figures, but have spared you the tedium by quoting the right guess at once); so we can take the figures for total weight and wing surface as found.

#### Definite Design.

We have now fixed weights, surface, aerofoil form and motor, and can proceed with the design.

We shall, as this is a largish machine, choose an aspect ratio of 6 to 1, which gives us 4 aerofoils of 6.15 feet chord by 17.5 feet "mean" span, which, with the top centre plane of 2 feet span, gives us a total "mean" span of 37.0 feet, and our total surface (which is surface of 4 aerofoils + top centre plane), of 440 square feet. I talk of "mean" span, as we shall employ ends raking at 20° for our aerofoils.

We must now draw out a side elevation of the body of the machine with seats, tanks, motor, and tail skid, keeping all

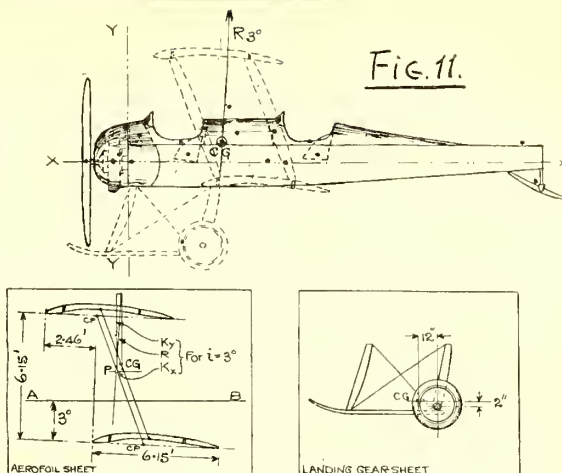


TABLE FOR HORIZONTAL & VERTICAL CG

ITEM	W	L	h	W×L(+)	W×L(-)	W×h(+)	W×h(-)
Propeller	23	+2.0	-	56	-	-	-
Motor	250	+7	-	175	-	-	-
Cowling	32	+4	+4	13	-	13	-
Motor Mounting	36	-2	-	-	7	-	-
Oil & Tank	86	-6	+1.3	-	52	112	-
Passenger	175	-2.5	+1.0	-	390	175	-
Passenger's Seat	10	-2.8	+4	-	28	4	-
Petrol & Tank	294	-5.2	+1.4	-	1530	412	-
Body	90	-6.7	-	-	602	-	-
Instruments	30	-7.1	+1.5	-	213	45	-
Controls	30	+7.5	-	-	225	-	-
Pilot	175	-8.7	+1.0	-	1520	175	-
Pilot's Seat	10	-9.1	+4	-	91	4	-
Tail	86	-19.0	+1.0	-	1630	86	-
Tail Skid	7	-14.7	-1.0	-	138	-	7
Aerofoils complete	430	-4.9	+2.8	-	2107	1208	-
Landing Gear	129	-2.5	-3.9	-	322	-	503
TOTAL (loaded)	1898	-4.58	+1.91	244	8855	2234	510

W = wt of item in lbs

L = Normal dist<sup>ce</sup> of CG of item from line Y-Y. + ahead, - behind.

h = " " " " " " " " X-X + above, - below

the weights as close together as possible. (Fig. 11.) We shall employ a "non-lifting" Tail plane, that is to say, a form symmetrical about its central horizontal plane and with this plane parallel to the axis of the propeller.

I consider this form the safest to employ, as it will give no difference in lift or depression, whether in the propeller slip stream (when the motor is running) or not (when the motor is stopped). We shall set the chord of the aerofoils at 3° to the propeller axis.

We now require to place our Aerofoils and Landing Gear, less Tail Skid, of course, on the body in such a manner that the total reaction on the Aerofoils, at 3° value for  $i$ , passes through the CG of the whole machine (of this more anon), and that the centre of the wheel axle of the Landing Gear is about 12" ahead of it.

This, of course, is another trial and error process, and had best be arrived at as follows:—Draw on a piece of tracing paper the side elevation of the Aerofoils (to same scale as Body, of course), with correct gap and stagger, also a base line AB inclined at 3° to the chords. From model figures for the Aerofoil form mark on chord of each Aerofoil the position of Centre of Pressure with  $i = 3°$ ; join these two points by a straight line, and on this line mark a point P, 4/7 of its length from the chord of the lower Aerofoil; through this point P draw a line perpendicular to the aforementioned base line AB. This line we can take as representing accurately enough the line of Lift reaction on our biplane, for  $i = 3°$ . Through this same point P draw a line parallel to the Base line AB, which will represent the line of Dynamic Resistance or Drift of our biplane for  $i = 3°$ .

From the figures for our Aerofoil form, we shall measure off, to some suitable scale, a distance from P on the Lift re-action line to represent our biplane's  $K_y$  value  $i = 3°$  and a distance from P on the Dynamic Resistance line to represent our



biplane's Kx value at  $i = 3^\circ$ . By drawing a parallelogram and its diagonal through our chosen point P, we now get a line (this diagonal, of course), which represents the line of Total Reaction on our Biplane at  $i = 3^\circ$ .

Note that we take  $\frac{4}{7}$ ths of the inter Aerofoil distance, not  $\frac{1}{2}$ , for the top aerofoil does more work than the lower, in about the proportion of 4 to 3, at small values for  $i$ .

To same scale we must draw on another piece of tracing paper a side elevation of the Landing Gear.

We must now place these over our body drawing in guessed positions, keeping the base line AB on the Aerofoil drawing parallel to the axis of motor, and proceed to make a first calculation for position of CG. For this calculation we shall take horizontal Moments about the fore end of the body, and vertical Moments about the axis of the motor, as convenient datum lines, taking the weights of the various items multiplied by the normal distances of their CGs from these datum lines. We can fix pretty accurately the CGs of the items. I suggest taking the CG of the Aerofoils as slightly above the centre of a line joining the centre points of the lines which join the centre points of the spars of top and of bottom Aero-

foils; slightly above (say  $\frac{11}{20}$ ths above bottom), because the centre plane and its struts are at the top of the whole structure. The CG of the body alone may be taken as about  $\frac{1}{3}$  of its length from its fore end; the CG of the Tail unit as about 1 foot ahead of the rear end of the body; the CG of the Landing Gear, assuming a form as shown, as lying  $12''$  ahead of, and  $2''$  above, the wheel centres; the CG of a man sitting as about  $12''$  ahead of the seat back and  $12''$  above the seat bottom.

The CGs of the other items, tanks with petrol and oil, engine, engine mounting, engine cowling, seats, controls, instruments, Tail Skid, etc., are easy to fix accurately enough by inspection.

If our first shot for Aerofoil and Landing Gear position be out we must slide them to new positions, and try again, till we get the positions which answer our requirements.

We have now fixed up our outline design, and it remains to consider strength and stability, and then to finally check whether we have sufficient power for the high-speed and for the climb.

(To be continued.)

## The de Havilland Gun-Carrier.

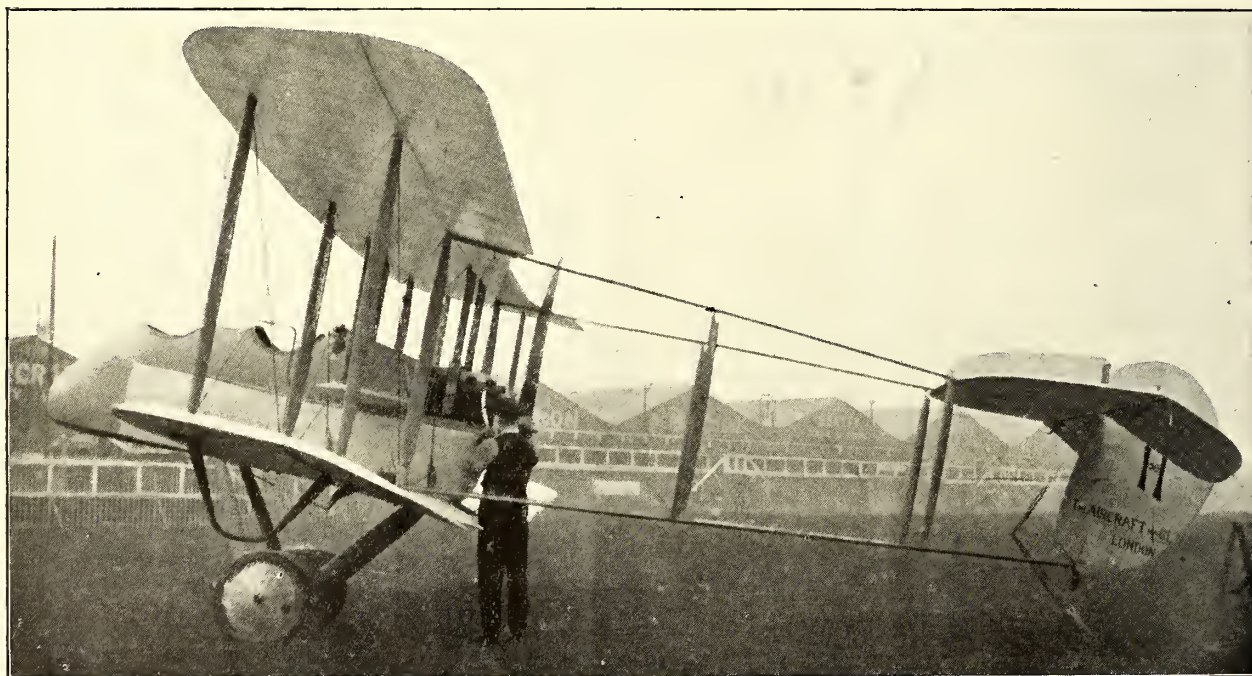
It is distinctly unfortunate that the first appearance of the first aeroplane designed by, and constructed under the immediate supervision of, Mr. Geoffrey de Havilland, now of the Aircraft Manufacturing Company, Ltd., since he produced the original B.E. 2 on which the Royal Aircraft Factory's whole reputation rests, should have occurred during war time, as one is naturally debarred either from illustrating or describing in detail many of the improvements instituted by him in the machine. As, however, the machine is not of a novel type, one can illustrate its general appearance and comment upon its performances without conveying any information about its construction which might be of use to the enemy.

It by no means represents Mr. de Havilland's ideal aeroplane, but is merely one of a general type required at the moment, and designed so as to utilise material immediately available, so that it may be reproduced quickly. In fact, the machine is a gun-carrying pusher biplane, bearing a strong family resemblance primarily to the Henri Farman, which may

be called its direct ancestor, and also to its collateral relations the Vickers gun-carrier and the ill-fated F.E. 2 of the Royal Aircraft Factory. The likeness to the last-named is particularly interesting because "de H. 1" shows how intelligence may overcome difficulties and produce excellence out of the same general material from which ignorance produces that which is worse than worthless.

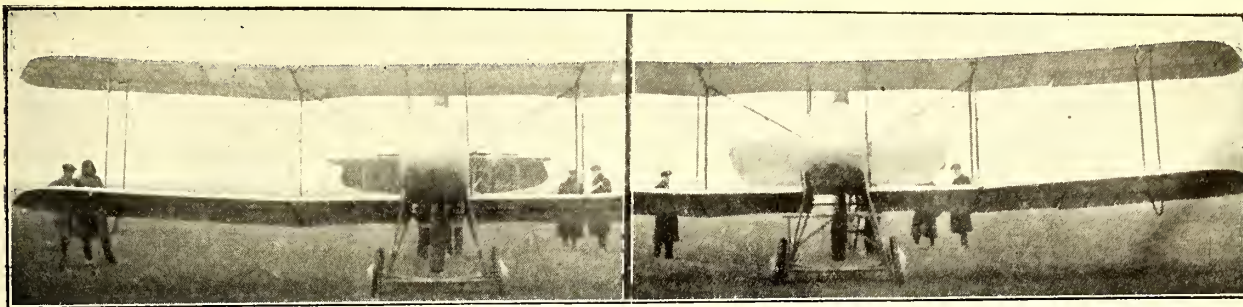
"de H. 1," which is her official name, is fitted with a standard 70-h.p. Renault, and being a pusher with triangular booms of ordinary round steel tube, and the usual network of wires inseparable from the type, it is very remarkable that her speed when fully loaded with fuel, pilot, passenger, machine-gun and ammunition, should be only two or three miles an hour less than the much vaunted B.E. 2 with the same engine, and that her climbing rate, though less than the B.E. 2, is a matter of between 15 and 20 per cent. better than that of the still more widely advertised B.E. 2c.

Furthermore, this speed and climb is not obtained by fake-



"de H. 1."—The new Gun-carrier recently produced by the Aircraft Manufacturing Co., Ltd.





Front Views of "de H. 1," with air brakes off and on.

ments such as stream-line wires and inadequate landing gear, nor by dangerously weakening the structure of the machine in order to save weight or head resistance. In fact the whole machine strikes one as being particularly stoutly built, and more than adequately strong in every direction.

It will be noted from the side view of the machine that the tail outriggers are longer than is usual in the type, that there is a rudder of considerable size, and that there is an adequate fin over the tail. In addition, the sides of the nacelle are extended down as curtains from the engine bearers to the trailing edge of the lower plane, so that there is a fin effect at this point also. In addition, the centre of gravity of the machine, owing to the placing of the pilot, passenger and gun, is considerably farther forward than in the F.E.2, so that the machine has no tendency to spin.

The wings have a decided dihedral, and there is also a dihedral between the angle of attack of the main planes and that of the stream-lined tail. As a result the machine is, so far as can be judged, as inherently stable as the B.E. 2c.; at any rate, Mr. de Havilland flew it for seven minutes without touching the controls, and then only resumed control because he could see no particular object in leaving the machine alone any longer.

The fact that he should thus have produced a machine which has all the advertised qualities of the B.E. 2c, plus the ability to carry a machine gun, and to climb more quickly in spite of the added weight, is a feather in the cap of the Aircraft Manufacturing Co., but what is still more to the credit of the firm and its designer is the fact that the machine can be reproduced without the delays arising from the necessity of purchasing almost unobtainable fittings. Everything about the machine is of the very simplest. There are practically no special stampings, forgings, pressings or any of the other irritating details which are breaking the hearts of the unfortunate firms who have been persuaded into the aeroplane industry by promises of orders for B.E. 2cs, and withal "de H. 1" is a better aeroplane.

The chassis, of course, is of the simplest, but it contains a very effective oleo-pneumatic shock absorbing device of Mr. de Havilland's design, so that it is particularly suitable for use on bad ground. Judging from its performance when tested on Saturday, the machine is capable of landing very slowly indeed, but in order to decelerate still further, Mr. de Havilland is now experimenting with air-brakes fitted just behind the pilot's seat as shown in the photographs. Those fitted are not yet considered satisfactory, so they may be left out of consideration in judging the machine as a whole.

It is hoped ere long that some of these machines may be turned out with the new 80-h.p. Renault instead of the old 70, in which case the speed and climb should be very notably increased, and the machine, which is already the fastest gun-carrying pusher for its power, should become about the fastest in actual fact. Both the designer and the makers are to be sincerely congratulated on a very fine piece of work.

#### Dr. Glazebrook on Stability in War.

Dr. R. T. Glazebrook, in his second lecture on aerial navigation in its scientific aspect, explained at the Royal Institution on January 30th how, as the result of elaborate and precise experiments, and calculations, the British aeroplanes now used in the war were safe and strong enough to bear usage in the

field and small accidents in the air. One of our aviators at the front lately said that he could not bear to see his friends undergoing dangers and difficulties in the trenches while he had the soft job of flying up aloft. This was a testimony to the high degree of stability that had been secured by measuring forces that deflected the machine and by securing complete control for the pilot through the exact adjustment of the rudder, the vertical fins, and the form of the wings, which might be flexible or fitted with movable flaps to resist pressure in certain directions. [An erroneous idea is suggested here, for there are very few inherently stable machines in use at the front and these are by no means favourites, owing to their slow speed and bad climbing power.—Ed.]

While stability depended much on the skill of the pilot, the skill required was much diminished in a stable machine. Automatic stability based on gyrostatic and other aids had not proved satisfactory, but inherent stability was attained through bringing counteracting forces to bear against gusts and removing factors causing oscillation. The leverage of the forces that caused pitching had been measured, and they were now so negatived that the tendency of a machine, when diving, to dive at a still more acute angle, was corrected, and it became stable. Similarly, in yawing, alteration of the tailplane counteracted the lateral force and gave stability. Lateral motion was further regulated by the size and position of vertical fins, but it was proved that constructing the wings at an angle served the same purpose as adding a central fin. As to strength, which was essential to stability, it was significant that machines were still in use that had been taken out by our Army at the beginning of the war. The lecturer pointed out that the stresses on the machine might be unexpectedly increased in flight, and allowance had to be made in construction for such a possibility as a sudden dive, making it necessary to bring the elevator into instantaneous operation, with a ten-fold multiplication of the stresses. [It is to be hoped that some of the hundreds of alterations in design which have delayed the deliveries of B.E. 2cs have been made with the object of meeting these stresses. If so, there are still a good many more alterations needed.—Ed.]

#### To an Anonymous Critic.

If that persistent, and occasionally abusive, anonymous critic, and evidently careful reader, of *THE AEROPLANE*, who signs himself "Albatross," will have the courage to disclose his name and address, the Editor will be pleased to reply by letter or in print to his questions and arguments, some of which seem quite worth answering. The said name and address are desired, not for publication, but as a guarantee of good faith.

One judges from his attitude that he is either an employee of the Royal Aircraft Factory, or is inspired by someone in that establishment, which probably accounts for his underhand method of attack, but better men than he have disdained the cover of anonymity under similar circumstances in connection with this paper, and there is no record of any of them suffering in consequence. An open and honest enemy is as much to be respected as a good friend, and he is frequently more amusing. Meantime, he is only wasting good paper—and apparently Government property at that—and is depriving other readers of the pleasure of a verbal "scrap" which might prove quite entertaining, for one cannot depart from the fixed rule of refusing to reply to anonymous letters, even when apparently emanating from official quarters.—C. G. G.



### Reciprocity.

The Mayor of King's Lynn has been informed that it is the intention of the Government to deal with the damage sustained by reason of the recent air raid on King's Lynn in a similar manner to that adopted in the cases of Hartlepool and Scarborough.

It is said that during last week close upon 700 recruits were enrolled at Norwich and Yarmouth, the best week since the rush in August and September.

A few more raids by sea and air and we shall really be able to pass a Compulsory Service Act.

### Good Work.

One of the most artistic productions which has resulted from the aircraft industry up to the present is the booklet issued by the Northern Aircraft Company, Ltd., of Windermere, entitled "About the Seaplane School." It is the work of the well-known artist, Mr. C. Fleming-Williams, who is not only one of the few people who can draw an aeroplane correctly, but is a master of pure draughtsmanship where land, water, or air are concerned. His little black-and-white sketches of Windermere are themselves gems of black-and-white art. The letterpress of the booklet is produced in a manner worthy of the illustrations, and the subject-matter of the letterpress is calculated to convince inquirers as to the efficacy of the school.

The system of tuition adopted by the school is clearly and concisely stated, and emphasis is laid on the fact that students are given an opportunity of "becoming" not aeroplane chauffeurs, but pilots thoroughly grounded—(should it not be in this case watered, or, at any rate, baptised?)—in the whole theory and practice of aviation." An excellent idea at the school is the use of a hydroplane driven by an air-propeller, which is used to give students practice in running fast over water and in judging speeds. Either this hydroplane or a fast motor-boat is always in hand in case of need.

Naturally, the fact that the school is situated amid the glorious scenery of Lake Windermere is an added attraction, and arrangements have been made for students to be accommodated at a first-class hotel at special rates; also, as there is cheaper accommodation in ordinary lodgings in the district, the proposition offered by the school is distinctly attractive.

Special terms are made for officers of either Service, which involve a very decided reduction on the amount it is necessary for an officer to lay out prior to obtaining his certificate. Also, those who have already taken their certificates are offered extra practice at quite reasonable rates. There is a good deal to be said for the firm's argument that when one has learnt to fly on a seaplane it is possible to fly a land machine, but that the converse is not the case. Anyone who is seriously contemplating learning to fly is strongly recommended to apply for the booklet, and the management of the firm are no doubt entirely competent to do the rest.

### Southampton District.

Naval aeroplanes have been busy on the South Coast. Sopwith tractors, scouts, and "pushers" have been in much evidence over Southampton Water. Wight seaplanes have been in use on several occasions, as also have Henri and Maurice Farmans, one of the latter making a good flight around the Isle of Wight on Saturday afternoon.

On Sunday, January 24th, all Southampton appeared to have caught the Zeppelin fever. Everyone was gazing up into the sky. How the rumour originated one cannot tell, but everyone had heard that an aircraft had been seen, and at places all traffic was stopped. At one place two or three hundred people had gathered round a tall man who was quite

sure he could see an airship. One old lady said: "Those Germans are bad enough for anything, but I never thought they would kill people as they came out of church. Are you sure it is a Zeppelin, sir?" At which the man with the wonderful eyesight looked annoyed. One small child, however, did not take things so seriously, and shouted: "'Tain't no airship—it's a cloud." At another "meeting" of this kind an old gentleman was making a speech as a sort of counter-attack on a youth who had ventured to say that the Germans were "very good fliers but too fly to attempt to come to Southampton."

### School and Weather Reports.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
South Coast ...	Fine	Show'y	Fine	Fine	Fine	Fine	Fine Windy
East Coast ...	Fine	Dull	Snow Show'y	Wet a.m. Fine, p.m.	Snow Show'y	Fine	Fine
Hendon ...	Good	Sp. end'd	Windy	Windy	Fine	Fine	Breezy
Lake District	Flying	Flying	Flying	Windy	Flying	Flying	Sleet

**Hendon.**—AT THE GRAHAME-WHITE SCHOOL.—Instructors: Messrs. Manton, Russell and Winter. Pupils with instr.: Prob. Flt. Sub-Lieuts. Hallifax, Petter, Wood, Souray and Irving (new pupil), all doing strts. Strts. alone: Prob. Flt. Sub-Lieuts. Digby, Driscoll, Hallifax, Petter, Hilliard, Souray and Wood. 8' or circs.: Prob. Flt. Sub-Lieuts. Driscoll, Mills, Digby, Walmsley, Hallifax, Hilliard and Petter, and Mr. Greenwood. Certificates taken: Prob. Flt. Sub-Lieuts. Mills, Walmsley, Driscoll, and Mr. Greenwood (four in all). Machines: Four Grahame-White biplanes.

AT THE BEATTY SCHOOL.—Instructors: Messrs. Geo. W. Beatty and G. Virgilio. Pupils with instr.: Messrs. Leeston-Smith (35 mins.), Anstey-Chave (10), P. E. Cornish (14), G. Merton (20), G. Beard (35), J. F. Roche (30), B. de Meza (10), Lieut. Bannatyne (31), J. H. Ormsby (27), V. E. Fanning (5), Gerrit Forbes (32), H. H. Bright (15), Vickers (10), P. C. Cooper (10), and Lieut. Broughton (20). Certificates taken: Messrs. Cyril Leeston-Smith, J. D. Newberry, E. T. Anstey-Chave, G. Donald, Lieut. E. Bannatyne and G. Merton. Machines: Beatty dual-control biplanes.

AT THE LONDON AND PROVINCIAL AVIATION CO.'S SCHOOL.—Instructor: Mr. G. Smiles. Pupil rolling alone: Mr. Lincoln. Strts.: Messrs. Moore, Bransby Williams, Noakes, England, Derwin, Henderson. 8's or circs.: Messrs. Abel, Laidler, Collett. Machines: Two L. and P. tractor biplanes. Mr. Collett flew for and gained his brevet on January 29th after three hours' actual flying time.

AT THE HALL SCHOOL.—Instructor: Mr. J. Rose. Pupils: Davy (15 mins.), Waterson (15). McConnochie (10); Davy (20), Waterson (40), McConnochie (55). Mr. J. Lloyd Williams took exceedingly good brevet on 45-h.p. Anzani. Machines: Hall tractor biplanes.

**Windermere.**—AT THE NORTHERN AIRCRAFT CO.'S SCHOOL.—Instructors: Messrs. W. Rowland Ding and J. J. Bland. Pupils with instr.: Messrs. G. L. Railton (75 mins.), A. Johnson (50), R. Buck (35), T. Hubbard (44), F. Macaski (20). Strts. alone: Mr. A. Johnson. Mr. R. O. Lashmar (103 mins.) completed first half of ticket, landing with engine cut off from 500 ft. in good style, and making good banked turns. Machines: N.A.C. propeller biplane, N.A.C. propeller monoplane. The Company have now perfected a system of changing students from the aeroplanes to the motor-boat or vice versa without stopping the engines, thus saving a lot of valuable time. On Monday Mr. Ding gave an exhibition to some visitors in his usual finished manner.

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"THE AEROPLANE," FEBRUARY 10, 1915.

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*Edited by C. G. GREY. ("Aero-Amateur")*

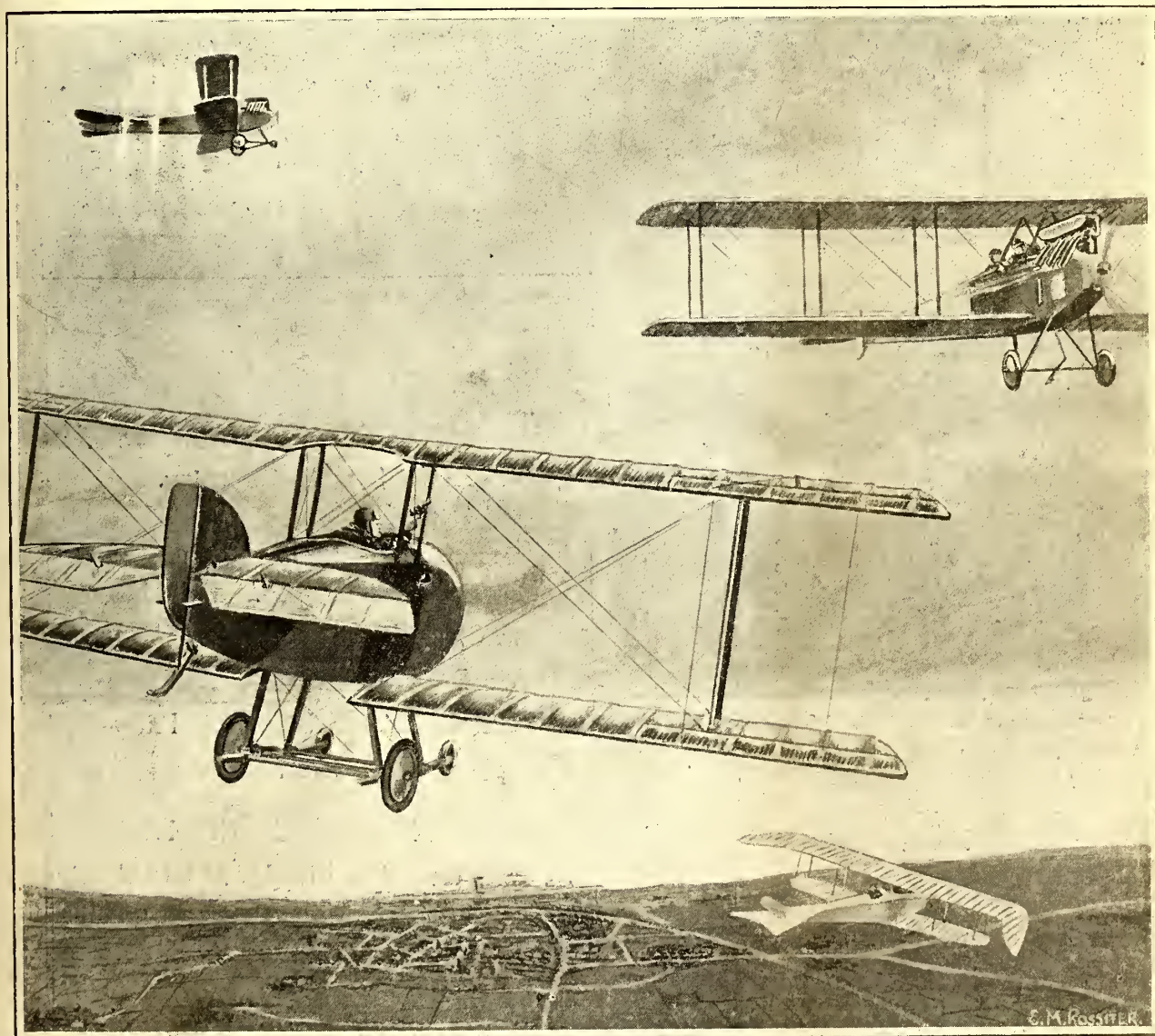
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WEDNESDAY, FEBRUARY 10, 1915.

No. 6

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## Another Point of View.

If it were not for the fact that his work is apt to have a deleterious effect on the development and progress of aviation in this country, the writings of one signing himself "Ornis," which appear at intervals in the "Times Engineering Supplement," would be among the most entertaining products of contemporary journalism, for they show a certain cleverness in conveying erroneous ideas by subtle suggestion rather than by bald and controvertible statement. The work of "Ornis" indicates mental agility of a distinctly Hibernian type, and there is considerable sporting satisfaction to be had out of criticising his articles, or, perhaps, one should say, in translating the truth into them.

On various occasions it has been shown that not only does "Ornis" reflect, or, rather, project, the views of those in high places at the Royal Aircraft Factory, but that he may almost be regarded as the Press Agent of that rather efficient mutual admiration society composed of certain individuals connected with the Government Advisory Committee for Aeronautics, the National Physical Laboratory and the Royal Aircraft Factory. The log-rolling methods employed by these gentlemen are familiar to most people who have any knowledge of politics, or of so-called "Learned Societies," and are particularly observable in some engineering societies.

Most engineers of practical ability and wide experience can point to numerous men in their own branch of engineering who have by consistent log-rolling made a name for themselves and have acquired official or semi-official positions far beyond their personal ability as engineers.

The process of thus rising to fame is fairly simple, and chiefly calls for an extensive superficial knowledge, accompanied by plenty of nerve, a ready tongue, and a proper understanding with other people of a similar nature. By writing consistently in would-be-considered scientific journals, by jumping in with volubility at every debate at the said so-called "Learned Societies," and by constantly referring to one another on these occasions as the elect authorities in this particular branch of science, any little group of men can bluff the rest of the world into believing that they are all they say they are, and a little bit more.

Meanwhile, the men who have bought real knowledge of their subject by bitter practical experience, sit, tongue-tied by unkind Nature, and wonder dumbly how men whom they know perfectly well to be their intellectual inferiors and without definite achievements to show for themselves manage to foist themselves on the world as the heads of their profession, and to obtain fat Government jobs and titles.

So many genuine engineers are now taking an interest for the first time in the construction of aircraft that it is worth while to draw their attention to the probable growth in a new branch of engineering science of a system which all of them have seen in their own Societies ever since they joined as modest young associates. There may be a chance for some of them to profit thereby. However, let us consider the latest product of "Ornis."

The Editor cannot undertake to return unsolicited manuscripts, whether accompanied by stamps or not, though every endeavour will be made to do so.

"The Aeroplane" is not connected with any other business at the same address, whether associated with Aeronautics or not.

### 1914 in Review—Without Music.

In the article under discussion he purports to review the events of the past year, and works himself into lyrical ecstasies, worthy of a Revue librettist, over all that Government institutions have done in 1914, "the year of the air, as none before since Wilbur and Orville Wright first flew."

His accuracy of statement may be gauged from the statement that it was "the year wherein the world and England saw inverted flying, looping the loop, and the 'tail-slide' or backward flying, the year of the Army's inherently stable designs in Britain; the year of the first 24 (and reputed 34) hours' continuous flight in Germany"; and more of a like nature. As a matter of fact, the loop was looped in Russia by Lieut. Nestoroff, in France by M. Pegoud, Mr. Hucks, and others, and in England by Mr. Gordon England in 1913; at Longwy Capt. Aubry on a Deperdussin monoplane flew inverted late in 1912; the "tail-slide" was slid by Mr. Moorhouse in 1911; Messrs. Johnston and Hoxsey flew backwards for 20 miles against a strong head wind in either 1911 or 1912; inherently stable aeroplanes were built and flown by Mr. Dunne in England in 1912 or earlier, and at least as early in Austria by Herr Etrich; and there seems to be no discoverable rumour of a 34 hour flight in Germany.

Next comes the statement that "During the year by far the fastest stable biplane for its power, the B.E., was adopted in large quantities by the Army, and ordered from 10 or a dozen large engineering firms, while many more have been adopted by the Navy." Here we have the first dangerously misleading statement. Before a thing can be adopted that thing must exist. One has yet to hear of a philanthropist adopting an unborn child. So far, thanks to the continual alterations in drawings, due to the futility, fatuity, and general ineptitude of the R.A.F. mismanagement, very few indeed of the "large quantities" of "stable biplanes" ordered in 1914 have yet been adopted, because the vast majority have not yet been born.

Further, the B.E.2c. is a B.E. only in name. In aerodynamic design and in constructional detail the B.E.2c. is an utterly different machine from Mr. de Havilland's successful experiment the B.E.2 of early 1912. It flies miles an hour slower than, and climbs barely half as fast as, the three-year-old design—which may, or may not, be comforting to young officers who are up against the fast flying, quick climbing German biplanes. "Fastest for its power" is no consolation in war, whatever it may be in an academic argument. Incidentally—Could anything be more grotesque than the attempt to standardise and order in large quantities a machine which admits in its own official title—B.E. stands for Blériot Experimental—that it is only an experiment?

The phrase of "Ornis" conveys the idea of big engineering firms turning out crowds of B.E.2cs. The truth is that a number of innocent motor manufacturers, implement makers, and so forth, have been induced to attempt to manufacture these particular machines, and are at present wrestling in agony with R.A.F. drawings and A.I.D. inspectors. These poor firms will inevitably lose money over work which is



useless when done, whereas if they had been turned on to duplicate simply built and effective machines like Avro two-seaters, Sopwith and Bristol scouts, and Vickers gun-carriers they would by now have added some hundreds to our existing store of useful aeroplanes.

To cap his extravagant claims for what would have been a rather dull year but for the growth of the purely naval and military organisations, apart from their material, and but for German progress, "Ornis" says: "Such a list as the above of aeronautical events and of changes effected in 12 months comes as an astonishment even to those who are immersed in the subject. For example, few are aware that an Army-built stable aeroplane has climbed into the heavens at the rate of 1,700 feet in a minute."

Here is rather a clumsy attempt to mislead. If any standard B.E.2c.—as supplied to the Army for regular use—has ever done 1,700 feet in less than 5 minutes it must have been assisted by a high explosive bomb. It is more than doubtful whether even a "faked" B.E.2c. with streamline wires, no chassis, and one of the new 80-h.p. Renaults, instead of the normal 70-h.p., ever beat 1,200 feet in its first minute off the ground. The only R.A.F. machines likely to raise for a few seconds such a climbing rate as 1,700 a minute would be an R.E., or an S.E., after a fierce dive, and both these types are notoriously unstable. It is doubtful whether any existing aeroplane has ever risen to a height of 1,700 feet from the ground in 60 seconds, and to convey the idea by suggesting that the inherently stable B.E.2c. has done so is to deceive the engineering readers of the "Times."

Incidentally, the adjective "Army-built" is rather amusing. One has yet to see Mr. O'Gorman, C.B., gazetted a wing-commander, though one never knows what may happen in these curious times. There are, however, one or two sapper officers in the R.F.C. who would greatly improve the moral state of the R.A.F. if it were put under military control.

#### Armouring Extraordinary.

Next, "Ornis" descants on armour, saying: "It was as recently as 1913 that a distinguished engineer described the armouring of an aeroplane against rifle-fire as beyond our aspirations; yet 1914 has shown in practice that this can in some measure be effected. In such biplanes, including the B.E. and R.E., as are manufactured now by almost the whole of the aeroplane industry, not only are the wings rendered so far invulnerable that the spars may be perforated by many rifle bullets, but any wire whatever can be cut, and any part of the fabric pierced, without bringing the aeroplane down, and even an entire strut has been blown away without breaking up the machine."

Just what relationship there is between penetrable spars and armour remains to be explained by "Ornis"; but the amusing phrase in the sentence is that which drags in the B.E. and R.E., apparently with the idea of suggesting that "such biplanes . . . are manufactured now by almost the whole of the aeroplane industry."

Anyhow, since he has introduced the subject, one may as well point out that the B.E.2c. is about the most vulnerable of modern British aeroplanes, so far as spars are concerned. The lightness of their spars has been mentioned in a previous issue, and apparently the designers of the machine already have their doubts, for it may be noticed that there is an auxiliary load-wire running to the upper front spar at a point about midway between the struts of the second bay from the centre, suggesting that after the machine had been designed it was found that the bay was too wide for the strength of the spar, and so this wire was stuck in to reduce the bending stress. It occurs to one that if a bullet hit the spar just where this wire joins it, and broke away a piece of the lower web of the spar along

with the wire junction, the spar would stand an excellent chance of crumpling up.

In parenthesis—it was an Avro which came safely home minus one of its struts, knocked out by a shell splinter.

It is then stated that, "For the pilot a seat of armour plate with high sides is provided." Very few with high sides have yet been provided—and why should not the observer be likewise protected?

Next comes the astonishing statement that "only in certain cases has the engine itself been armoured, for the excellent reason that the bulk of tactical reconnaissance and observation of artillery-fire is conducted at ranges such that even with a disabled engine the aeroplane can glide to safety within the lines of its own side." Poor "Ornis" always puts his foot in it when he touches military subjects. Tactical reconnaissance may easily extend ten miles or more behind the enemy's lines, and even artillery-fire observation, with modern guns, may extend as far. A ten-mile glide from a maximum of 6,000 feet, it is true, only needs a 10 to 1 gliding angle, but the last two miles would have to be done from 1,000 feet downwards, so the odds against getting home would be fairly long, and against the usual south-west wind in Western Europe it would be impossible. The real reasons for not armouring engines are (a) that putting so much weight in front would necessitate redesigning the machine, (b) that the additional safety secured by the armour is not considered value for the sacrifice of climbing speed or the reduction of fuel supply necessary to compensate for it. For the same reason long-distance machines for strategical reconnaissance are not armoured either; and, in fact, as they generally fly higher than those engaged on tactical reconnaissance, they are less likely to be hit and can better do without armour.

Perhaps one of "Ornis'" most comic statements is that "Dual control, moreover, has been abandoned because the extra weight can be better utilised as armour." Dual control was abandoned (a) to prevent the pilot and passenger from quarrelling and probably falling out in another sense, (b) because of its extra weight, but the question of armour was never raised at the time, and the whole matter of armour is still lamentably neglected. If the R.A.F. really wants an effective scheme for an armoured machine I shall be happy to supply it.

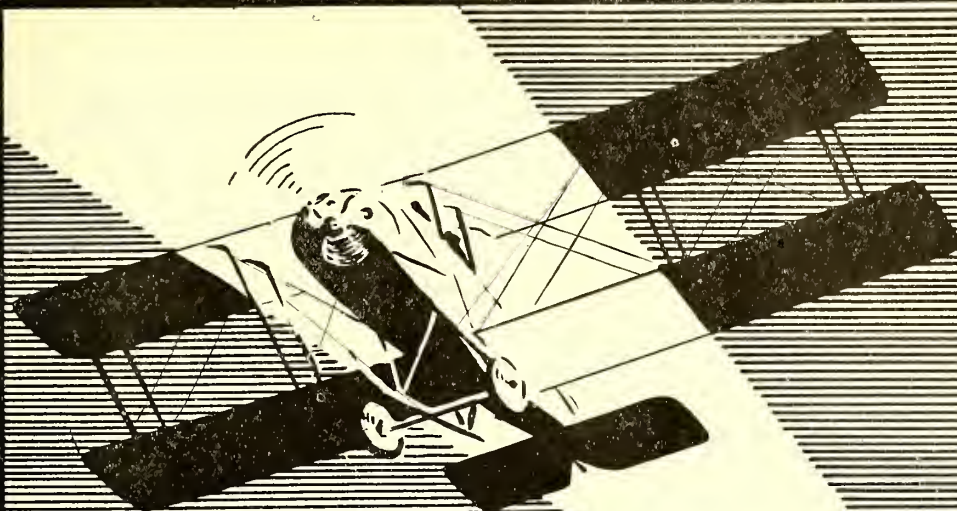
#### The Monoplane Wail.

Under the heading "The Triumph of the Biplane," "Ornis" says of the monoplane: "It was recognised that its so-called 'eyeableness,' useful as it was for *réclame*, must give way before the virtues of the biplane, the military ban placed the year before on all monoplanes, with one or two exceptions, being thus justified." This follows a reference to "a great wail by the uninformed" against the imposition of high factors of safety, and against the "very useful so-called ban on monoplanes."

Now, the "wail" of this paper (one fits the cap on with pleasure) was against the R.A.F. imposing factors of safety on rival constructors and ignoring these factors itself—thus unfairly handicapping its rivals' performances. It is therefore worth while to mention that the R.A.F., despite this advantage, has been handsomely beaten by other makers on all points—*videlicet*, such efforts as the B.E.8, with a factor of safety of about one to one in its centre struts.

The "wail" against the ban on monoplanes was not against the abolition of monoplanes as such, but against the R.A.F.'s use of its influence to squeeze out certain firms which appeared dangerous to it. These firms made monoplanes of a kind which had never broken in the air, whereas the types allowed to remain in use had done so before, and are still doing so—a British officer was killed on one last month. Also,





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the "wail" was directed against the scrapping of expensive material, and the withdrawal from the R.F.C. of perfectly good machines which were needed for practice. If the managers of the firms which were thus deliberately ruined had been asked decently to build biplanes they would have done so. In fact, Mr. Flanders—one of the victims—did build a biplane which was at least the equal of anything the R.A.F. has ever turned out.

An attempt was made at the same time to squeeze out the Avro biplane, which only failed because the Admiralty kept the firm alive when the Army, apparently acting on R.A.F. advice, left them without orders for something like a year.

#### **The Impartial Witness.**

"Ornis" has sufficient subtlety to mention the winning of the Schveider Cup by the Sopwith sea-tabloid—as proof of biplane efficiency and of his own impartiality—but all good work by other British aeroplanes is carefully ignored—naturally, the efficiency of the Avros and of the Sopwith and Bristol tabloids would be too painful a subject to mention.

The only other reference to the R.A.F.'s rivals are to fatal accidents on a Blériot, a Bristol, a Maurice Farman, a Morane.

The official excuse for the death of Captain Downer through the collapse of a B.E. is carefully given, and then it is definitely stated that "A fatal accident on an old B.E. in March was due to wear and tear before the flight, by reason of apparent rough usage through some eighteen months. The warning here doubtless contributed to spread the excellent system of overhaul that is used by the Army Aeronautical Inspection Department." Some people, of course, have no consciences, but that unofficial explanation of the deaths of Captain Allen and Mr. Burroughs through the breaking of an obviously inadequate rudder-post is a trifle past the limit.

#### **Inspired Humour.**

A reference to the Aero-engine Competition brings in perhaps the most humorous touch in the article. "The aeronautical engine has taken its position among British manufacturers by reason of the Government's aeroplane engine competition of March-June. Its substantial prize of £45,000 was carried off by the Green water-cooled engine, and large orders were also placed for the Royal Aircraft Factory's design of air-cooled engine."

For years the Green has been heartily condemned and discouraged by the R.A.F. staff. Mr. Fred May, being about the most obstinate man in the world, barring the editor of *THE AEROPLANE*, still persisted, and after winning every competition open to British engines—except one—his engine captured the latest and biggest prize—which was not £45,000, unfortunately. Then the R.A.F. suddenly decided to "corner" Greens and fit them to the latest R.A.F. brain-storm, the F.E.2c., for which they had to have the biggest engine immediately available. Consequently, poor "Ornis" has to fall into line with this paper for once and praise the Green engine to save the R.A.F.'s face.

His attempt to couple with the Green the R.A.F.'s air-cooled engine—a crib of the Renault, with Salmonson patent valve-springs—is daring, but people have not quite forgotten that the R.A.F.'s engine went to pieces on the testing machinery devised by the R.A.F. for the discomfiture of others; nor have they forgotten the

pretty phrase of a certain engineer who remarked of the R.A.F. engine: "If it runs for ten minutes it becomes a glowing mass." It has always been something of a puzzle to understand why the R.A.F.—a purely experimental establishment, we are told—was allowed to order its own unproved engine in quantities while thoroughly tried engines like the Anzani—which did as well as anything in the competition—are left without orders.

"Ornis" continues: "This very successful competition also caused the Gnome, the Renault, the Canton-Unné, and the Austro-Daimler types of engine, all of which were doing well, to be articles of British make just when they were most wanted." It will be noted that he carefully omits the Anzani, but includes the Renault, which was not even in the competition; but then the Renault happens to be in favour with the R.A.F.—so accuracy of statement does not matter.

As to the others, to-day, after six months of war, very few of the British-built engines have been delivered, whereas any of the makers would have started building a year or two ago if they had received the slightest encouragement. But in those days the R.A.F. was trying to make its own engine run, so anything which was likely to produce a successful rival in this country was rather cleverly discouraged.

The hypocritical congratulations of "Ornis" to those who have scored in spite of the efforts of his friends at the R.A.F. would be quite funny if they were not so nauseating. He is a humorist in his way, but, on the whole, I prefer Harry Tate to Uriah Heep.

#### **Flights of Fancy.**

By way of a finish "Ornis" puts in a few words for other members of the Mutual Admiration Society. He refers to the experiments, both model and full scale, of the National Physical Laboratory, "which had achieved stability—experiments vouched for by Colonel Seely, who, with characteristic pluck, verified them by making uncontrolled flights in person, without any previous practice." One may add that these were as nothing to Colonel Seely's prior and subsequent uncontrolled flights of fancy, resulting doubtless from his extensive previous practice in what Mr. Churchill calls "terminological inexactitudes."

And so far as knowledge of inherent stability learnt from experiments with models is concerned, one Chief Petty Officer Sayers, R.N.—late of this paper—knew as much two or three years ago as the N.P.L. and R.A.F. together appear to know to-day.

Finally, "Ornis" remarks: "If the return of peace does not see the beginning of commercial aeronautics, postal aviation, and rapid aerial passenger services it will be for other reasons than any unreliability of the aeroplane or the aeroplane pilot." Here I must profess myself in perfect agreement with "Ornis," and with Mr. Mervyn O'Gorman, C.B., Superintendent of the Royal Aircraft Factory, who at various Aeronautical Society meetings has expressed almost exactly similar views. If "commercial aeronautics" is not then a success it will be because the firms who have been enticed into the aeroplane industry by orders for machines to R.A.F. designs have lost so much money that they regard "commercial aeronautics" as a fiasco. However, there may still be enough independent firms building to their own designs to develop the commercial aeroplane, without the assistance, or interference, of "Ornis" and the Government Mutual Admiration Society.—C. G. G.

#### **A Straight Question.**

As the R.A.F. is out to advertise the B.E.2c. by every method at its disposal, will the Aeronautical Inspection Department have an 80-h.p. Avro and a Martinsyde "tabloid" fitted with streamline wires, and stripped chassis, and let the world know what they can do in the way of speed?

The B.E.2c. did under 70 m.p.h. with ordinary wires and chassis. The makers now advertise its flying speed at 80

m.p.h., though the machine faked to do this speed is not suitable for ordinary military use in the hands of average pilots and mechanics. With ordinary cables and a huge central skid, the Avro does 84 m.p.h., and the Martinsyde, with the unnecessarily cumbersome chassis which the Army insists on having, does 87 m.p.h. What would they do if faked to match the B.E.2c., and how many times as fast would they climb? Be it remembered also that their horse-power is less.

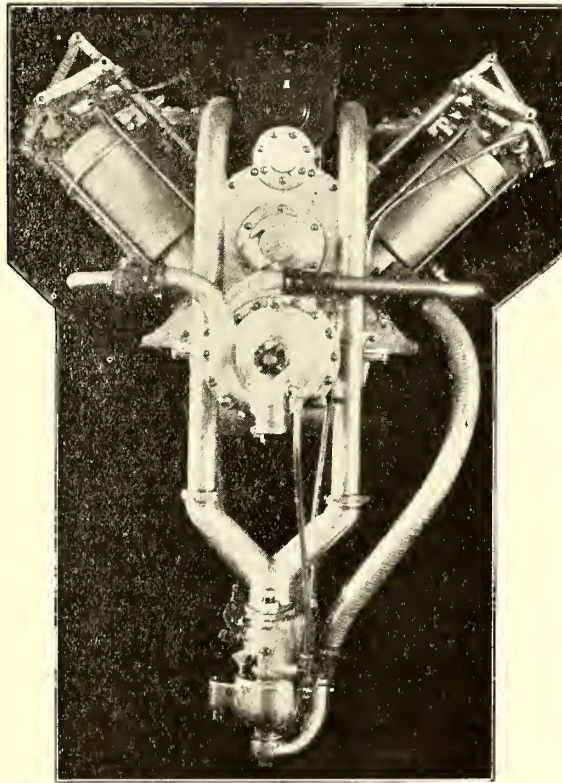
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## Naval and Military Aeronautics.

### GREAT BRITAIN.

From the "London Gazette," February 2nd, 1915.

WAR OFFICE, February 2nd.

REGULAR FORCES.—Commands and Staff.—Deputy Assistant Quartermaster-General.—Major J. T. Dreyer, Royal Artillery, from a Deputy Assistant Director at the War Office. Dated January 26th, 1915.

ESTABLISHMENTS.—Royal Flying Corps (Military Wing).—The undermentioned appointments are made:—

Squadron Commander—Major W. G. H. Salmond, Royal Artillery, from a General Staff officer, second grade, and to be seconded. Dated January 26th, 1915.

Flying Officer—Captain Bernard E. Smythies, Royal Engineers. Dated January 20th, 1915.

SUPPLEMENTARY TO REGULAR UNITS OR CORPS.—Royal Flying Corps (Military Wing).—The date of appointment of Second Lieutenant James Valentine is August 6th, 1914, and not as stated in the "Gazette" of August 11th, 1914.

The undermentioned to be second lieutenants (on probation). Dated January 25th, 1915: Charles Percy Ogden and Richard Hamilton Collier. Dated February 1st, 1915: Marwood Elton Lane and John Everard Storey.

\* \* \*

A Third Supplement to the "London Gazette" of February 2nd, published on February 3rd, contains the following military appointments:—

WAR OFFICE, February 3rd.

REGULAR FORCES.—Commands and Staff.—Railway Transport Officer.—(Graded for purposes of pay as a Staff Captain).—Lieutenant Frederick William Abraham, Royal Naval Air Service, and to be temporary captain. Dated December 10th, 1914. (Substituted for the notification which appeared in the "Gazette" of January 1st, 1915.)

ESTABLISHMENTS.—Royal Flying Corps (Military Wing).—The undermentioned temporary appointments are made:—

Flying Officer—Captain Hugh L. Reilly, 82nd Punjabis, Indian Army. Dated August 5th, 1914.

Sydney Charles Parr to be temporary quartermaster, with the honorary rank of Lieutenant. Dated November 5th, 1914.

INSPECTION STAFF.—Assistant Inspector—Captain J. H. Robinson, the Suffolk Regiment, and to be seconded. Dated January 27th, 1915.

SUPPLEMENTARY TO REGULAR UNITS OR CORPS.—Royal Flying Corps (Military Wing).—The undermentioned to be second lieutenants (on probation): Ernest Alfred Edward Wood. Dated December 22nd, 1914. Dated January 19th, 1915: Ernest Edward Hodgson, late second lieutenant 6th Dragoon Guards (Carabiniers), and Lionel Macdonald Wells Bladen, Louis Frederick Rudston Fell. Dated February 1st, 1915.

\* \* \*

A Fourth Supplement to the "London Gazette" of February 2nd, published on February 4th, contains the following military appointment:—

WAR OFFICE, February 4th.

REGULAR FORCES.—Establishments.—Royal Flying Corps (Military Wing).—The undermentioned appointment is made: Flying Officer—Second Lieutenant George C. N. Nicholson, Special Reserve. Dated January 1st, 1915.

\* \* \*

From the "London Gazette," February 5th, 1915.

ADMIRALTY, February 1st.

ROYAL NAVAL AIR SERVICE.—The following gentleman has been granted a temporary commission as flight lieutenant: Farnall Thurston. Dated December 7th, 1914.

The following gentleman has been granted a temporary commission as flight lieutenant: Collins Price Pizey. Dated August 4th, 1914.

WAR OFFICE, February 5th.

REGULAR FORCES.—Establishments.—Royal Flying Corps (Military Wing).—The appointment of Second Lieutenant F. P. Adams, Special Reserve, to be a flying officer, notified in the "Gazette" of December 24th, 1914, is antedated to August 7th, 1914.

A Supplement to the "London Gazette" of February 5th, published on February 6th, contains the following military appointment:—

WAR OFFICE, February 6th.

REGULAR FORCES.—Supplementary to Regular Units or Corps.—Royal Flying Corps (Military Wing).—Second Lieutenant (on probation) Owen B. Howell resigns his commission. Dated February 7th, 1915.

\* \* \*

A Second Supplement to the "London Gazette" of February 5th, published on February 8th, contains the following military appointments:—

WAR OFFICE, February 8th.

REGULAR FORCES.—Commands and Staff.—The undermentioned appointment is made:

BRIGADE COMMANDERS.—Lieutenant-Colonel (Honorary Colonel) the Right Hon. John E. B. Seely, D.S.O., Hampshire (Carabiniers) Yeomanry, Territorial Force, and to be temporary brigadier-general. Dated January 28th, 1915.

ESTABLISHMENTS.—Royal Flying Corps.—(Military Wing).—The undermentioned appointments are made:—

Flight Commanders. Dated January 27th, 1915: Lieutenant Patrick H. L. Playfair, Royal Artillery, from a flying officer, and to be temporary captain; Lieutenant Alexander Shekleton, the Royal Munster Fusiliers, from a flying officer, and to be temporary captain; and Captain Hugh C. T. Dowding, Royal Artillery, from a General Staff officer, third grade.

The appointment of Second Lieutenant James Valentine to be a flying officer, notified in the "Gazette" of December 15th, 1914, is antedated to August 6th, 1914.

### NAVAL.

The following promotion and appointment were made at the Admiralty on February 5th:—

Temporary Flight Lieutenant F. K. McClean has been promoted to the rank of temporary acting flight commander, with seniority February 2nd.

Flight Sub-Lieutenant (temporary) J. D. Newberry, to the "Pembroke III," for Royal Naval Air Service, to date February 4th.

\* \* \*

The following appointments were made at the Admiralty on February 6th:—

Probationary Flight Sub-Lieutenants—C. N. Leeston-Smith, to the "Pembroke III," to date February 5th, and E. F. Bray, E. J. Hodsoll, E. I. M. Bird, P. C. V. Perry, T. Hinshelwood, J. C. Brooke, and C. H. Chichester Smith, to the "Pembroke III," to date February 1st, all for Royal Naval Air Service.

Mr. G. Donald, entered as probationary flight sub-lieutenant and appointed to the "Pembroke III," for Royal Naval Air Service, to date February 5th.

Flight Sub-Lieutenant J. M. D'Arcy has been promoted to the rank of flight lieutenant, with seniority February 1st.

\* \* \*

The following appointment was made at the Admiralty on February 8th:—Mr. J. B. P. Ferrand has been entered as probationary flight sub-lieutenant and appointed to the "Pembroke III," additional, for Royal Naval Air Service, to date February 6th.

\* \* \*

The inquest on the bodies of Probationary Flight Sub-Lieutenant B. W. Hart, R.N.A.S., and Lieut. Simpson, A.S.C., who were shot by sentries on the sea-front at Torquay, was concluded at Torquay on February 3rd. The lamentable nature of the incident is too well known to need repetition in these columns. The jury returned a verdict of "Accidental death," adding a rider that with a view to public safety the military authorities should exercise greater discretion in the selection of more efficient men for patrol duty on the public highway.

Sub-Lieut. Hart was a direct-appointed officer under instruction, and had not at the time of his death taken his certificate. The sympathy of all is due to his relatives and friends.

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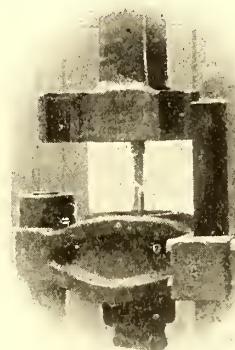
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On Thursday, February 4th, Flight Commander J. T. Babington, R.N., D.S.O., and Lieut. E. V. Sassoon, R.N.V., were injured in an accident at Dover. It is reported that they were landing on an Avro with a tired engine, after a spiral glide, when a gust turned the machine over. Lieut. Sassoon sustained a fractured thigh and a broken arm, but the pilot escaped with a sprained ankle.

Lieut. Sassoon, who is one of our earliest aeroplane pilots, has already done good service in France with Army motor transport, having gone over in the early days of the war. He was recently appointed to the R.N.V.R. for service with the R.N.A.S. All will wish him an early and complete recovery.

On Monday last he was operated upon at his home in Grosvenor Place, and at the time of writing was progressing as well as could be expected.

Flight Lieut. Collyns Pizey, R.N., whose appointment as temporary flight lieutenant is noted, was appointed as sub-lieutenant last year, and promoted to acting lieutenant for service with the Royal Greek Navy, in which service he was given the acting rank of commander, under Rear-Admiral Mark Kerr, M.V.O., R.N. (Vice-Admiral R.G.N.), the Chief of the British Naval Mission to Greece. In organising the Greek Naval Air Service, and as instructor, Lieut. Pizey has been as successful as he was when with the Bristol Co. His present appointment does not make it clear whether he is still to remain as a loan to Greece.

The following advertisement appeared on February 3rd:—  
Motor Drivers and Motor Bicyclists.—40 Motor Drivers are required; men must be accustomed to Rolls-Royce and Lancia cars. Also 30 expert Motor Bicyclists; all the above are required for Home Service; rate of pay 4s. a day and 17s. 6d. a week keep.—Applications should be made in writing to Transport Officer, Air Department, Admiralty, London, S.W.

[Presumably required for the Anti-Aircraft Corps, and probably now all engaged, but it may be worth a would-be warrior's while to apply, and to mention that he knows an aeroplane by sight, as the trouble with most of the Anti-Aircraft Corps, at any rate with the gunners, seems to be that they cannot tell our own aeroplanes from those of the enemy.—Ed.]

One of the crew of the destroyer "Meteor," which took part in Admiral Beatty's North Sea victory, writes:—"While the boats were rescuing her survivors from the 'Blücher' a Zeppelin and a Taube put in an appearance. The Taube dropped about three bombs, one of which fell amongst the drowning men. I suppose the idea of our rescuing an enemy was beyond the understanding of the cultured pilot of that machine. The 'Arethusa' and destroyers opened fire on both aircraft, and five minutes later they deemed it safer to sheer off.

"A battle raging for four hours between ships of such enormous size and destructive qualities steaming at thirty knots the whole time, and with aircraft and submarines taking part, is most certainly without parallel in the history of the world."

The wedding took place quietly at Welton Church, Brough, on Saturday morning of Miss Lou Harrison-Broadley, daughter of the late Colonel H. B. Harrison-Broadley, M.P., of Welton House, Welton, and Flight-Lieut. J. P. Wilson, Royal Naval Air Service, son of the late Mr. George Wilson, of Gilling Castle, Yorkshire, and Mrs. Wilson, of Torquay.

#### MILITARY.

The following passages in the descriptive account, published on February 2nd, which has been communicated by an Eye-Witness present with General Headquarters continuing and supplementing the narrative published on January 31st of the movements of the British Force and the French armies in immediate touch with it, deal with aircraft:—

January 30th.

The lull in the action which took place on the 26th, after the German attacks on the 25th, has already been noted. On that day one of our aviators made a very successful reconnaissance over a section of the German line. Travelling at a low altitude, he not only obtained much useful information but managed to drop ten bombs on the enemy's trenches.

On this day (January 30) a German aeroplane flew over Bailleul and dropped four bombs, killing a child and wounding another child and a woman. During the whole of the week, up till and including Friday, the weather has been bright and frosty, which has been a welcome change.

The following passages in the descriptive account which has been communicated by an Eye-Witness present with General Headquarters continuing and supplementing the narrative published on the 2nd inst., deal with aircraft:—

February 2nd, 1915.

Saturday, January 30th, was bright and warm. The day passed in comparative quiet, although the enemy shelled our left and left centre severely. Our artillery practice, however, produced good results at many points along the front. Among other successes our shells set fire to a building which was being much used by the enemy in a village east of Neuve Chapelle, and with the assistance of our aircraft a direct hit was made on a German gun near Frélinghien. A hostile column of infantry observed by our aeroplanes on a road opposite our right centre was subjected to a heavy fire, which, it is believed, inflicted considerable loss.

Referring to February 1st, the Eye-Witness writes:—

A hostile aeroplane dropped four bombs near the Lys with out doing any damage.

Introducing the Army Estimates in the House of Commons on February 8th, Mr. J. Tennant, Under Secretary for War, made the following reference to aircraft:—

With regard to the Flying Corps, it has been proved beyond doubt that the British design of aeroplane has shown itself superior to that of any other nation.

That is due to the Royal Aircraft Factory initiated by Lord Haldane, and the fact that so much progress has been made with the design is largely due to the work of Colonel Seely. The workmanship and material put in are so good that our aeroplanes last almost twice as long as those of any of the other Powers concerned.

[Mr. Tennant, being a follower of Temp. Brig.-Gen. Seely, D.S.O., naturally assists the Official Mutual Admiration Society. Incidentally there is good reason to believe that the German aeroplanes last at least as long as our own, and probably longer.—Ed.]

The engines in our existing aeroplanes are almost entirely French, and I would express the acknowledgment of the Government to the French Government for the very valuable assistance they have afforded us. But we are gradually, and I may say actually, becoming self-supporting in the matter of aeronautical material. The first British-made engines are now in use, and it will not be long before a number of them reach the front. The motor trade and the shipbuilding trade have both responded to our request, and are now manufacturing aeroplanes.

Recruiting has been extraordinarily good for the Royal Flying Corps. We are getting an extremely good class of men in the ranks.

There is a large waiting list of gentlemen anxious to receive commissions, and I may say the British pilot in the operations so far has proved himself without exception superior to the German pilot. (Cheers.)

[For once it is possible to agree cordially with the civilian official view. The officers of the R.F.C. are worthy to rank as pilots with the best in the world, and as soldiers with the best in the British Army—and no praise could be higher than this. The N.C.O.'s and men have worked indefatigably for the safety of their officers in the air, and to make their duties easier when on the ground, and they well deserve everything which can be said to their credit.—Ed.]

Lieut. Sharpe, of the Canadian contingent, attached to the Military Flying School at Shoreham, was killed on Thursday, the 4th.

It is reported that he had been for a trip on a Maurice-Farman biplane, and when near Lancing College on the return journey, his machine suddenly dived to earth. The biplane was smashed, and Lieutenant Sharpe died in a few minutes. It is stated that Lieutenant Sharpe was making his first flight un-

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accompanied. He had been at the Shoreham Aerodrome for about a fortnight. At the inquest on Friday it was stated that the machine side-slipped owing to the inexperience of the pilot.

\* \* \*

The number of accidents to pupils, including those without fatal results, suggests that a general overhaul of the military flying schools is needed. A good pilot is not necessarily a good instructor; in fact, the reverse is frequently the case, for the better the pilot the less patience he is likely to have with a slow pupil, and, with the exception of the Central Flying School, insufficient trouble seems to be taken in the selection of instructors for their ability to instruct, apart from their many other doubtless excellent qualities. Certainly some of the officers acting as instructors are excellent, but others have been notably bad and the continued prevalence of accidents suggests some still are. A little time judiciously spent in selection of instructors would certainly save many aeroplanes and might save some lives.

\* \* \*

An A.S.C. officer writing home on January 29th describes an exciting moment in his day's work:—

"We had quite a thrill about an hour ago.

"This morning as the work was in full swing a little black speck was sighted far, far away in the blue, cloudless sky, and as it approached it was recognised as a hostile aircraft. It came on, however, undaunted, until it was about two miles away and a good 4,000 feet up. Then a remarkable thing happened.

"One of our aeroplanes, which had just passed over us on the look out, was then about half a mile away and perhaps 1,000 feet up, and going in the same direction as the German. He suddenly spotted the enemy behind him. He banked over till he stood on his wings, and did a glorious loop. It looked just like a tumbler pigeon, and was done all in a flash. I don't know whether he intended to do it or not, but it was certainly his quickest way of about-turning, though our hearts jumped into our mouths for a second or two.

"But to see him put on the pace after he had recovered was perfectly thrilling. The looping had taken all the way out of him, and directly he got straight he simply leapt forward with the roar of a rocket, and made for his quarry like a shot from a gun. Another of our fellows appeared from nowhere, and also gave chase. The German, of course, had by this time turned and bolted, and I suppose he will say we 'broke off the engagement.' Unluckily we could not see the end. That man (who made the somersault) must have the blood of a fish and nerves of cast steel."

\* \* \*

A member of the R.A.M.C. writes in his diary:—"January 22nd, Friday.—A beautiful day and a German aeroplane up with ours at present. We saw our guns fire about a score of shells at her and the enemy's guns firing at our planes also. We heard later that this plane located the headquarters in a village near by with a star shell, and five minutes later a German shell passed through the building, but none of our people were killed.

"January 23rd, Saturday.—Many aeroplanes up. A sunny, frosty day. German guns firing incessantly on our mechanical birds. We could see the flash of every shell as it burst in the air, but no damage was done."

\* \* \*

A correspondent has sent the following stories from the front, for what they are worth. They are strange, but strange things happen in war time:—"A Frenchman who had frequently brought the 'Figaro' and 'Petit Parisien' for our aviators to drop over Lille, one day came with some beautifully made small balloons. Messages having been attached to them, they were to be dropped over the town and the 'Lillians' would put answers on them and wait for a favourable wind in order to return them, whereupon 'we must fire ze rifles at the little balloons and they will swim down here to us.'

[Incidentally, the gas supply of Lille is under German military control.—Ed.]

"The other concerned an officer flying a Blériot solus: he felt a fainting fit coming on and just had time to push the controls forward a little before he went off. He came to on the shock of the machine landing in a ploughed field without breaking anything."

\* \* \*

MACLEAN—WALKER.—On February 8th, at Holy Trinity Church, Roehampton, by the Rev. Canon Browne, Major Archibald Campbell Holms MacLean, the Royal Scots and Royal Flying Corps, to Jane Cassels, eldest daughter of Mr. and Mrs. George P. Walker, of Heatherwood, Putney Heath.

Major MacLean was recently appointed a Squadron Commander, after much very valuable work as an Instructor at the Central Flying School, where his soldierly qualities and his strict system of discipline did much to raise the military value of those who passed under his command, while, at the same time, he won their respect and personal regard. All who have served under him or with him will wish Major and Mrs. MacLean every good fortune.

#### FRANCE.

The French official communiqué issued on Thursday, February 4th, at 11 p.m., says:—

The very effective fire of our artillery in the valley of the Aisne reduced enemy batteries to silence, caused explosions in the ammunition wagons, dispersed working parties and put aircraft to flight. In front of Verdun we brought down an aeroplane and captured the aviators.

\* \* \*

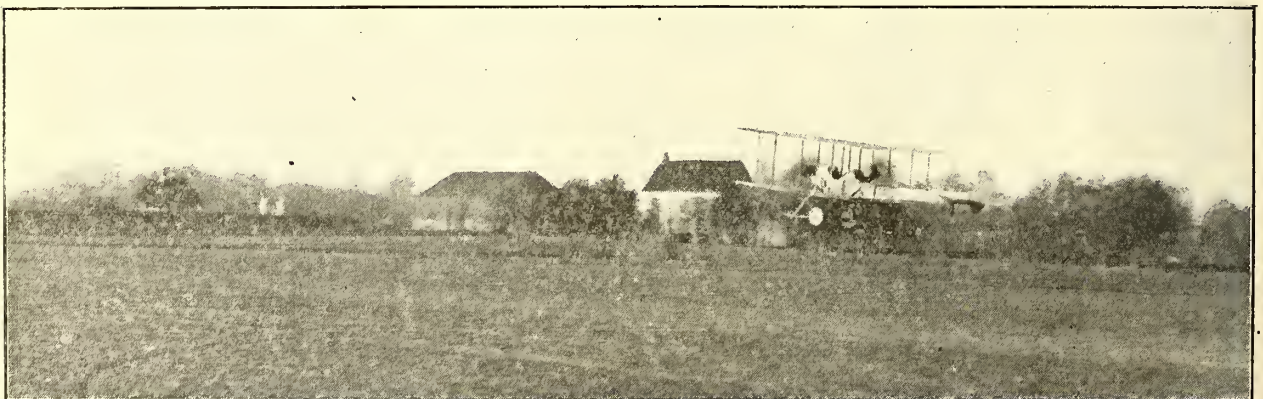
The afternoon's communiqué of February 5th says:—

In Belgium.—The German aviators showed great activity. An official note to the 11 p.m. communiqué of the same date adds:—"An aeroplane dropped bombs on Saint Dié. Four victims are reported among the civil population."

\* \* \*

The French official communiqué of February 6th says:—

We have brought down a captive balloon over the German lines to the north-east of the Somme.



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A German aeroplane flew over Remiremont, 30 miles north-west of Belfort, at 1 p.m. on February 2nd, and threw two bombs, killing one person. At about 3 p.m. a hostile machine appeared over Belfort, but a violent fire was opened on it, and at the same time French aeroplanes rose and drove it off.

\* \* \*

The "Echo de Paris" of February 4th states that two German aviators attempted to fly over Lunéville. They were seen, and vigorously bombarded. They endeavoured to sheer off in a hurry, but one of them had to descend at Vathimenil, where the guard captured the two occupants and the machine.

\* \* \*

It was reported from Paris on February 4th that several German aeroplanes flew over Hazebrouck on that day, and a considerable number of bombs were thrown in the neighbourhood of the station. Some damage to property was done, but no one was injured.

\* \* \*

A Reuter telegram from Paris on February 5th says that travellers who arrived that afternoon state that at 10 a.m. a Taube flew over Villers-Cotterets, 13 miles south-west of Soissons, but was greeted with such a fierce machine-gun fire that it fled without dropping any bombs.

\* \* \*

Writing from Paris on February 8th, the correspondent of the "Times" says:—"The activity of aircraft on both sides has been one of the features of the war in the western theatre during recent days. Continual proof is afforded of the superiority of the Allies in this direction. Three German aeroplanes have been brought down during the past week, one near Dunkirk, another near Gebweiler by salvos from infantry. In the latter case a machine gun was captured intact. The third fell a victim to British airmen near Lille, where it was brought down with a machine-gun."

\* \* \*

The "Morning Post's" Paris correspondent reports the following remarks by a French aviator returned from the fighting line:—

"One soon gets used to the idea of being shot at, and one gets the feeling that there is no great danger of being hit even if bullets go through the planes. The worse experience, I think, is to have shells bursting below you. Then, again, you are not so much afraid of fragments of the shell hitting you as you are of the air disturbances caused. I have gone through it twice, and on both occasions I had the utmost difficulty in getting control of the machine, which was thrown about in the most curious way as the result of the explosion." [Apparently the British aviators, being generally better mounted, are very little worried by air-concussion.—Ed.]

"Since the beginning of the war," he continued, "a very useful little invention has been brought out. There is a danger, as a result of the extreme cold, of the lubricating oil freezing in the cylinders. When the engine is started again there would obviously be considerable danger of the engine exploding. To keep the cylinders warm by means of naked light would be dangerous, but advantage has been taken of the fact that petrol vapour will keep platinum black glowing if passed over it, to construct special lamps, which glow continually, but never reach the temperature at which they would set fire to an explosive mixture of petrol and air. These are hung near the cylinders when the aeroplane is not in use, and in this way obviate any danger." [Will some kind French friend tell us some more about this? It seems to have some advantage over the old familiar blow-lamp method of warming up cylinders.—Ed.]

\* \* \*

Another French officer writes:—"In directing fire the aeroplane has been invaluable, and the English now have splendid machines. At the start of the war their artillery suffered because there were not enough of them, but now there are plenty of English aeroplanes. They are splendid in getting quickly off the ground, are all armoured, and as a result of their work the rather haphazard shooting of the British artillery at the outset of the war has been corrected to become exact."

[This officer is slightly mistaken. Our armour consists only of bullet-proof seats. It is interesting to see the matter of paucity of machines, and of lack of co-operation with artillery, to which reference has so often been made in this paper, confirmed by an independent observer.

He exaggerates somewhat in our favour in saying that we have "plenty" of machines. We still need hundreds—and even thousands—more, and we might have had them but for the mistaken policy of trusting the R.A.F., after all the previous lessons we have had.—Ed.]

\* \* \*

The "Aerophile" states that the Germans have just completed a huge cruising biplane far superior to all previous models. The machine, of the Aviatik type, is believed to carry four motors, each 225 horse-power, able to carry four passengers, petrol for ten hours, and two thousand pounds of explosives. It is stated that the machine is the same which tried to reach London on December 24th, and was driven away by English machines. [The last portion of the report is obviously false, but the advent of a huge German machine is only to be expected, unless the Germans have less intelligence than one gives them credit for, and they have given no indication of lack of foresight hitherto. Whichever side puts a few really big fighting machines in the air first will have command of the air. We might have had them months ago, but for the time, money, labour and material wasted on producing B.E.2cs, which are valueless from a military point of view, whatever they may be as a scientific "stunt."—Ed.]

\* \* \*

Mr. Percy Noel, of "Aero and Hydro," Chicago, and representing the "Chicago Daily News" in France, sends some interesting cuttings from the latter paper. One of these states, under date January 12th, "The official aviation reports show 135 deaths in the French aero service from the beginning of the war to January 1st. This includes observers, passengers, pupils and pilots."

Mr. Noel also narrated on December 30th how he visited Romanshorn on the shore of Lake Constance, opposite Friedrichshafen. His estimate of the speed, bomb carrying capacity, and the fecundity of Zeppelins was probably based on local legends:—"News of the Zeppelins is carefully guarded in German Switzerland, hence it was necessary for me to leave the country before describing what I saw there. After my arrival at Romanshorn, a town near Constance, I had a view of the newest Zeppelin in the air. This is almost like the others. It has four motors of 200 horse-power and, in addition, can carry an equipment of eight tons at a speed of from forty to sixty miles an hour. One Zeppelin is being finished every three weeks, then it undergoes a test of three weeks. Three of these machines are almost finished and are lying in the sheds near Friedrichshafen. Construction tests continue, showing that Germany retains its faith in dirigibles."

\* \* \*

Mr. Noel's views on aviation as it concerns the safety of Paris are of some interest. Writing from Paris early in December he said:—"The public was led to believe that there were 100 or more French aeroplanes stationed at various distances from the city to protect it against these raids and finally there were popularly believed to be 200 aeroplanes guarding the city against the aerial invaders. There seemed to be no really good reason why even a score of them—much less a hundred or more—could not keep one or two invaders out of the Paris air. The fact of the matter is that the protection of Paris from aerial invasion existed almost entirely in the imagination. We were encouraged to believe that the aero guard that should have been on duty was watching over the city. But it was not. Now it is. And it will continue to guard Paris aerially despite the powers' assurance to President Wilson that civilian centres will not be made the object of attack."

"There are not 100 aeroplanes guarding Paris from attack, but, as accurately as I can learn, there are forty-eight. Roland Garros, whom I have frequently seen in Paris driving a two-seated runabout, has been stationed here since the beginning of the war, and the 'aviation militaire' depended largely upon him to keep the 'Taubes' away from the city rather than upon

a comprehensive organisation. He gave free exhibitions over Paris for many weeks. I understand there are eight escadrilles of six aeroplanes each stationed about Paris, at various points of the compass. I have seen three of the camps, situated twenty-five kilometres (about sixteen miles) from the city. They were established the latter part of October, and since that time there have been few German aeroplanes over Paris.

"There are escadrilles detailed to guard Paris stationed at Issy-les-Moulineaux, at Juvisy, and at Buc, the well known flying fields, where there are scores of hangars. The hangars are not all in use. Several of them are occupied by machines just being delivered to the Government by their makers and others are occupied by school machines, for at Issy, and particularly at Buc, schooling of new pilots goes on daily.

"I can think of only two reasons why Paris was not properly guarded in September and October—before the Taubes dropped death and destruction on the city. An insufficient reason is that the French counted somewhat upon 'bluff,' and a better reason is that every capable pilot and aeroplane was needed for more important work at the front. There army corps were to be protected, while at Paris it was a matter of a little damage, possibly a few lives—if the Germans dared. But the spoiled child of a city, the pampered Paris—where the populace is 'requested,' 'begged,' or 'urged' when municipal or military orders are issued—was not long to endure such neglect.

"Besides, it is estimated, France has increased its force of modern machines 40 per cent. since the war began, despite losses of aeroplanes amounting to fully 20 per cent. of the original active number."

#### RUSSIA.

A Reuter telegram from Petrograd dated February 4th reports that on February 2nd Russian aviators successfully dropped bombs on gatherings of German reserves and German trains at Rava, Rzeccize, and Bogucize.

\* \* \*

The Warsaw correspondent of the "Messaggero" says that Russian aviators, adopting tactics from the Germans, have showered thousands of leaflets on the enemy's camps, containing particulars as to the condition of the German and Austrian armies and the number of German prisoners in Russia. The leaflets are signed in the name of the Grand Duke Michael.

[Rome can invent something better than that when it tries.—Ed.]

#### BELGIUM.

Mr. Percival Phillips, of the "Express," reported on February 4th as follows:—"On the Belgian Frontier, Thursday, February 4th.—Late messages to-night state that an Allies' aeroplane dropped bombs over the German depot at Knocke at one o'clock this morning. Four Allies' aeroplanes also made a daringly successful raid northward this afternoon over the portion of the Belgian coast in German occupation. Heavy shrapnel firing by the German anti-aircraft guns met them. One airman was injured, and the others disappeared in an easterly direction at five o'clock. Information from another source states that the Allies' aeroplanes were seen above — Harbour last night and dropped a number of bombs on the depots and docks. Several loud explosions were heard during the night at Sluis, Oostburg, and other Dutch frontier towns."

\* \* \*

It was reported from Amsterdam on February 5th that to the north of Westende allied aviators are frequently reconnoitring the German positions. At 4.30 p.m. on the 4th, guns and machine guns at Heyst and Zeebrugge opened a heavy fire on an allied aeroplane, which, however, flew over the sea apparently unscathed. Many wounded continue to arrive at Bruges. The "Telegraaf" learns from Bergen-op-Zoom that an aviator this morning flew over Antwerp. Heavy fire was opened by the garrison, but the aviator escaped unhurt.

\* \* \*

The special correspondent of the "News and Leader" at Rotterdam, cabling on February 5th, reports:—"From the Dutch frontier it is reported that Allies' aeroplanes flew over Zeebrugge last evening and dropped bombs. Many loud explosions were heard.

"A message from Bergen-op-Zoom states that an English

aeroplane flew over Antwerp this morning. It was fired at, but not hit, and returned in the direction of the English lines.

"Another message, of the same date, from Amsterdam says: 'A message from Sluis says that at 4.30 p.m. yesterday guns and machine-guns at Heyst and Zeebrugge opened a heavy fire on an Allies' aeroplane, which, however, flew over the sea apparently unscathed.'"

\* \* \*

The "Express" correspondent on the Belgian frontier wired on February 7th: —

"During the past week the Germans have concentrated an unusually large number of aeroplanes, chiefly of the Aviatik and Albatross types, at their new air bases at Ghisteltes, Bruges, Ghent, and Thielt for the purpose of aggressively opposing the Allies, who have suddenly shown a great increase of activity.

"Several enemy aeroplanes were seen to-day high in the air above the coast describing great circles and closely watching the Allies' scouts, who were making the usual thorough reconnaissance of the German positions.

"Although no important encounter has yet been reported, the enemy undoubtedly realise the futility of trying to scare the opposing air fleet by shrapnel and intend seriously to fight aeroplanes with aeroplanes. All the important officials of the German air wing are said to be now in Flanders."

\* \* \*

Mr. René H. Feibelman, of the "Express," at Amsterdam, sends a somewhat vivid account of an aeroplane duel near Brussels. His message is dated February 7th:—"My correspondent, who has just arrived from Belgium, states that on Friday afternoon a British aeroplane flew over the manoeuvring plain at Etterbeek, near Brussels. The German soldiers were ordered to fire, and when no hit was made a Taube was sent up to try to bring the English aeroplane down.

"In a few minutes they could hardly see anything of the aeroplanes, which were hidden behind a cloud of white smoke from the quickfiring guns each aeroplane carried. They could hear the reports of the terrific air duel, but they did not know what was happening until the Taube was seen making a zig-zag movement. Then it fell to the ground.

"Despite the danger of making a demonstration, thousands of people, who watched the fight from the neighbouring heights, cheered while the British aviator unfolded a Union Jack and waved it to the Belgians, who sang the British National Anthem while the Germans not far away were firing at the aeroplane. The latter escaped uninjured. The two Germans in the Taube were killed and the machine shattered."

[Evidently the "quick-firing guns" on the belligerent aeroplanes were either badly lubricated, or else the mixture in their carburettors was incorrect.—Ed.]

#### GERMANY.

A report from Copenhagen states that private despatches from Berlin say that in the southern part of the Western battlefield on both sides aeroplanes have lately been increasingly active. French aeroplanes have daily been making long flights over Alsace, dropping bombs on barracks and other military establishments. French aeroplanes have even crossed the Rhine, but there are no reports as to the extent of the damage caused. German aeroplanes made a tour over Nancy, dropping bombs in the quarter round the railway station, and also over Lunéville and Pont-a-Mousson.

\* \* \*

The "Evening News" special correspondent at Rotterdam reported on February 4th:—"I learn that Count Zeppelin has had a long interview with the Kaiser and that a more energetic airship campaign has been decided on, particularly against the British Fleet and transports. A Hamburg café largely frequented by airship officers contains a large glass model Zeppelin and airship relics. I am informed by a Dutch traveller that no air pilots have attended the café for two days, and that a big airship raid is contemplated."

[Of course, the café may only have passed under "entirely new management," which has not proved a success.—Ed.]



The "Express" correspondent at Geneva reported on February 5th:—"General von Bordingen, who is in command of the German operations in Lower Alsace, has been driven from his headquarters near Altkirch by the attacks of the Allies' aeroplanes, and has been forced to return to Mulhouse. As Mulhouse is also menaced, the State papers and valuables are being removed from there to Freiburg.

"A German aeroplane fell near Basle yesterday, and the pilot and the observer were seriously injured. The machine was smashed to pieces."

[This is the first mention of French aircraft in connection with ordinary French military offensive operations, apart from raids, in the Alsace-Lorraine area. Watch this district for the next big battle.—Ed.]

\* \* \*

The "Telegraaf" of Amsterdam learns that a hostile aviator threw bombs on Mülheim, Baden, on February 8th. Two of them fell about 200 metres from the garrison hospital in a soft field, doing no harm.

\* \* \*

The following passages in an article contributed to the "Morning Post" by a Dutch man of affairs, who has quite recently returned from a visit to Germany bear directly on aircraft:—

"In Cologne there was a special change to be noticed, as at night the city is very considerably darkened, as a result of the air raids. At 1 a.m. all lights are extinguished, instead of going on until 4 or 5 a.m., as in normal times. Apparently the English aviators missed doing considerable damage by a very small margin, as they only failed to hit the engine-house of the gasworks by about 200 feet, and shattered many windows and doors of the works with the force of the explosions of their bombs. They also only just failed to hit the Zeppelin sheds, getting very close indeed—a different result from Düsseldorf, where they undoubtedly did very considerable damage. Anti-aircraft guns and powerful searchlights have been erected to guard against a similar attack, and skilled gunners have been withdrawn from the front to man them. Similar precautions have been taken in Düsseldorf and elsewhere.

"Aviators are granted the (Iron) Cross of the Second Class as soon as they have indicated an enemy position with sufficient accuracy to ensure its being successfully shelled. The method adopted is for the aviator to fly in a figure of eight and the 'waist' of the eight indicates the exact position of the desired object. This requires a good display of skill on the part of the aviator."

[One would think that it needed very much more skill on the part of the gunners to locate the waist of the 8.—Ed.]

#### AUSTRIA.

An official dispatch received at Amsterdam from Vienna says: In the Adriatic an air attack by our aviators on French transports was successful, bombs being dropped.

#### HOLLAND.

On February 3rd a French biplane, with two officers and a machine-gun, landed at Colynsplaet, in the province of Zeeland. The crew were interned.

A report from Amsterdam on February 4th, says:—"At 7 p.m. yesterday an aeroplane was seen at a considerable height going north over Havelte, Onna, and Zuidveen (in the frontier province of Drenthe, North-East Holland). While over Onna and Zuidveen the airman worked a searchlight, which considerably alarmed the inhabitants." According to the "Maasbode," the machine was an airship.

#### SWITZERLAND.

It was reported from Paris on February 4th that a German aeroplane twice flew over the town of Bonfol, in Switzerland. It was fired at by the Swiss infantry, but escaped injury. The aviator, who apparently had lost his way, set off again in the direction of Bâle.

#### ITALY.

As if to confirm my words on future retirements likely to result from the changes in the organisation heretofore known as the Aviation Battalion of this country, the Italian papers are commenting silently—by giving it in a few concise phrases—on the news that Lieut.-Colonel Douhet, C.O. of the battalion, has been relieved of his duties and transferred to the Staff of

the VII Army Corps at Ancona. It is thought that he had "sent in his resignation." The particulars are evidently not abundant even at Turin. Colonel Chev. Giulio Rossi has been appointed to succeed Colonel Douhet.

The Antoni aerodrome at Pisa has been probably only temporarily taken over by the military authorities, as a step in the preparation of the Aeronautical Corps for "business."

Three more civilians—Pensuti, Landini and Resmini—have managed to obtain the higher military brevet, running Maggina very close. The two former should be well-known names to attentive readers of the columns of THE AEROPLANE.

A very serious accident occurred last week-end at Piacenza to Capt. Matteucci, in command of the escadrille there, owing to the monoplane he was flying not lifting properly when getting off for the purpose of doing some signalling practice with an observer on board. To avoid telegraph wires the pilot attempted to turn about 60 feet from the ground, lost way, crashed down, and was removed badly injured. The observer stood up in the machine and was uninjured.—T. S. H.

#### SYRIA.

The "Times" publishes an amusing story of a recent seaplane reconnaissance by the Allies at a Syrian port, sent them by a lady who witnessed it. "A two-funnelled cruiser came in sight from the south at about 9 a.m. At once there was great excitement. Everybody who had a roof went up on it, and crowds lined the seashore, ready for any bombardment that might take place. And then, wonders of wonders, a neat, small thing, like a brown bird, dropped over the side into the sea, skimmed the water, and gracefully flew up into the air, transformed into a seaplane! How they all did work to frighten it away! Soldiers hid under cactus hedges and fired their rifles at it, the Bedouin galloped about, shouting and firing. The Commander himself fired at it, but it paid no attention. It hovered over them a little and then disappeared into the sunshine towards the interior. About an hour and a half passed when suddenly a loud humming filled the air, and there was the seaplane directly over the city.

"On flew the threatening brown bird and circled round and round over the barracks and Government House, where the rest of the soldiers—that is, those who were not under the cactus hedges—were in ambush. On it went until it came directly over the small German colony. The German Consul gave orders, and the colony was evacuated at once—not one man left there to frighten the menacing brown bird away! But the brown bird soared harmlessly back again—southwards towards its nest, on to which everybody thought it was going to drop.

"It dropped. A shout of joy went up from the soldiers under the cactus hedges, from the wild, whirling Bedouin, and even from the Commander himself, but a subdued groan from the unobtrusive crowds lining the seashore, for it had dropped into the sea instead. Now it would sink, lost for ever. The shouting, the rifle shots, the mad horseback manoeuvres—all had told, were taking effect—so more of it, the Commander encouraged, to complete the destruction of the brown bird. But he got no response except a profound and sudden silence, for there was the brown bird darting like an arrow straight through the water, leaving a shining, frothy, white track behind it in the blue sea. It came alongside its nest, a crane stretched out its long arm protectively over it and gently drew it up, where in a few minutes it disappeared.

"Now what next?" the onlookers' faces said. 'Why, nothing,' replied the cruiser. Her funnels began to smoke furiously, she turned her back on them all, and very slowly moved off towards the horizon. 'Let me tell you something,' said one Moslem spectator to another standing by. 'In the air it can fly, on the water it can walk. What can we do with a thing like that? Let us go home, ya Sheikh!' And they all went home.

"But disaster followed close on the heels of the brown bird, for that very afternoon several people were arrested by order of the Commander. It had been a day of hot sunshine and some had, unfortunately, put their sunshades up. The Commander was a bright man, however, and he knew at once that they had been signalling to the seaplane, especially one ill-fated lady, whose parasol happened to be a red one. All

these were taken to the Government House; some were flogged, some were detained a day or two, and some were merely advised that it was wicked, also dangerous, to communicate with the enemy. Such is Turkish government."

#### CANADA.

At the second annual motor show, organised by the Montreal Automobile Trade Association, and open from January 23rd to 30th, was exhibited a biplane, apparently on Caudron lines. The correspondent who has been kind enough to send a cutting from the Montreal "La Presse," a translation of which is given below, states that the official advertisement described the machine as a "military airship, fully equipped with a bomb-thrower and a Ross quick-firing gun"! "La Presse" says: "For the public in general there will be several novel attractions; thus one will see in a special corner a real aeroplane, armoured, and mounted with a cannon for rapid fire, which has been constructed in Canada . . . by the Canadian Aircraft Co. This aeroplane is mounted with a rotative Gnome motor of 60 h.p. to furnish a speed of 60 m.p.h., carrying two persons. The wings are of the semi-rigid type, and it (sic) is similar to those which have been ordered by the English aviators' corps. The true power of this biplane has been demonstrated by the magnificent flights which M. G. Pollien has made at more than 4,000 feet above the city of Montreal."

#### The R.N.A.S. Comforts Fund.

The good work done by Mrs. Sueter on behalf of the friends of the R.N.A.S. continues briskly, and no less than 79 cases, containing 8,700 garments, have been dispatched to date.

This week 523 garments have been sent by request to the men under Commander Samson, R.N., at the R.N.A.S. base in France, who will also soon receive a case of preserved provisions. This is a very sound idea, for the Service rations, though plentiful and wholesome, become monotonous.

Staff-Surgeon H. V. Wells, R.N., acknowledging the receipt of the clothing, writes to Mrs. Sueter: "Thank you so much for the parcel of warm clothing sent for the men of this Service. I need hardly say they are very much appreciated, and also that the officers and men of the R.N.A.S. are greatly indebted to you for the splendid and continued work on their behalf. The two dozen pairs of socks from Boston, U.S.A., was a charming gift." (These had been sent by a friend of Mrs. Holt Thomas in America.)

It should be noted that mittens and mufflers are arriving in vast numbers, and, therefore, knitters who can tackle the more difficult and laborious task of making sweaters will find their

work accounted doubly unto them for righteousness. Those who cannot knit the larger garments can assist in their purchase by sending contributions, however small, in cash to Mrs. Sueter, The Howe, Howe Hill, Watlington, Oxon.

The following cash contributions are acknowledged this week:—Cedric Lee Co. (employees), £10 10s.; Mrs. W. E. Hodgkinson, £5; Mann and Grimmer (employees, 13th contribution), 12s.; Mrs. Kestell, 10s.; Miss W. Cooke, 10s.; Master Raymond Ashton, 10s.; Vickers, Ltd. (woodworkers, 8th contribution), 6s.; Mr. O. Ayler, 5s. Total for week, £18 16s. Total to date, £723 19s.

#### A Question in the House.

Mr. Ingleby (U., King's Lynn) asked the Under Secretary for War how many Zeppelins raided the East Coast on January 19th; whether the Zeppelins were accompanied by motor-cars; if so, whether he could give the number of such cars; and whether any of them had been identified or any of their occupants arrested.

Mr. Tennant (Under Secretary for War).—It is not in the public interest to give the information which may be in the possession of the Department in regard to the first point. The other points are being further investigated, and I hope to be able to give an answer shortly.

[Evidently Mr. Tennant, having served so long under Lieut.-Colonel (T.) J. E. B. Seely, has acquired the habit of never telling the plain truth when any other form of answer can be found. Presumably, "it is not in the public interest" to say, "We don't know." If Mr. Tennant perseveres he may in time himself become a Lieut. Col. (T.), if not a Temp. Brig. Gen. in command of Colonial Irregulars—on whom Heaven look kindly in their time of trouble!]

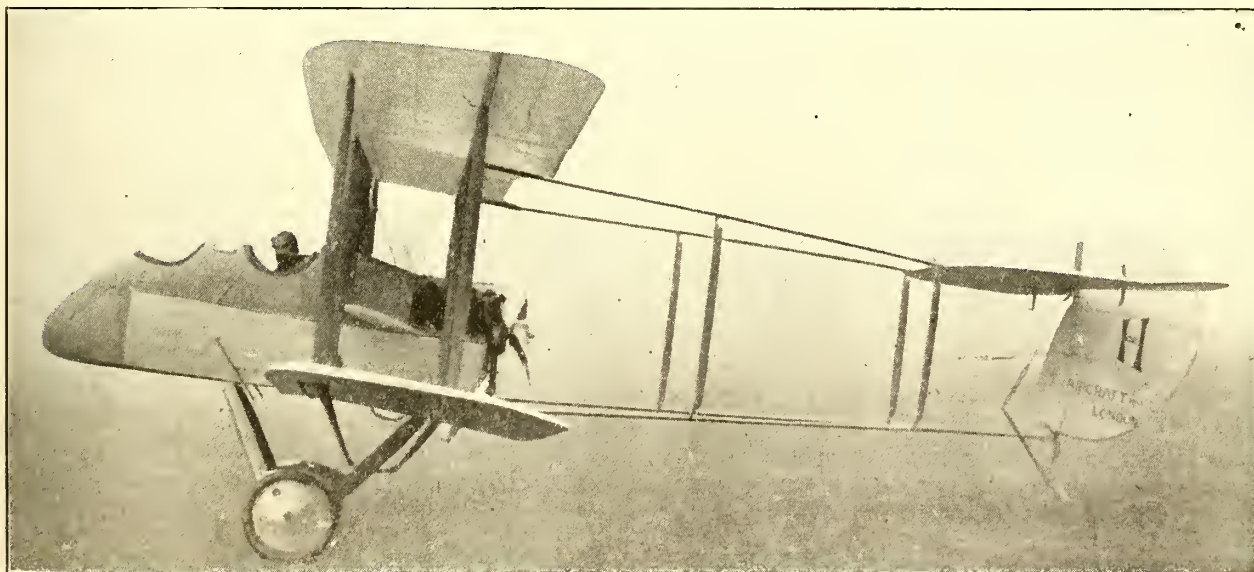
As a matter of fact, it is not even certain that they were Zeppelins at all. Some people, who are quite well qualified to judge, still believe they were only seaplanes.—Ed.]

#### The Defence of the Realm.

At Saddleworth, on February 3rd, Arnold Whitehead and J. H. Whitley were each fined 10s. and costs, under the Defence of the Realm Act, for unlawfully using a fire balloon such as could serve as a signal.

The prosecution was undertaken on the advice of the military authorities, who said the sending up of fire balloons was a not uncommon foolish prank, which had given rise to unnecessary alarm and trouble. The defendants said the balloon was a flimsy toy, incapable of spreading alarm.

One ventures to suggest that a certain amount of scaring is an excellent tonic for the people of this country.



Side View of "de H. L.," the latest product of The Aircraft Manufacturing Co., Ltd., with the designer, Mr. Geoffrey de Havilland, in the pilot's seat.





column 9 we have values of  $\beta$ , or inclination of tail plane to line of flight, in our case  $\beta = a$  throughout; in column 10 corresponding values of  $k_v$  for tail plane; and in column 11 corresponding values of  $k_x$  for tail plane; in column 12 values of total reaction coefficient  $r$  on tail plane,  $r$  being, of course,  $= \sqrt{k_x^2 + k_v^2}$ ; column 13 is for values of  $l$ , perpendicular distance from C.G. of machine to line of action of  $r$ ; column 14 for values of  $r \times l$ ; column 15 is for values in column 9

divided by values in column 16—i.e., for  $\frac{A \times R \times L}{1 \times r}$ —and this gives us the required tail area necessary to just counteract the moment of reaction on the aerofoils, assuming the tail as in undisturbed air.

If we can get accurate model figures for the air reactions on the body of our machine we should get out a second table, similar to the foregoing, to find the necessary area of the tail plane to counteract the instability of the body. But as we may not have these figures, and as the reaction on the body is comparatively small for a narrow form such as we are using, we may, in the absence of reliable model figures, neglect the second table, and merely add a small amount to the tail surface necessary for the aerofoils alone—say  $1/10$ th.

As to how the figures for columns 7 and 13 are arrived at, in a similar manner to that in which we drew the line of total reaction on our biplane for  $i = 3^\circ$ , we must draw a series of lines representing lines of total reaction on it for each of the  $i$  values in the table. We can then on our side elevation drawing measure the perpendicular distances from C.G. of machine to each of these lines, these distances being values for  $L$ , to scale of drawing. On the figure I have, for clearness, only drawn line for  $R$  at  $i^\circ$ .

As for the tail plane, assuming we shall decide to employ one of the form shown, as a good compromise between strength and efficiency, if we have not got figures for a model of this form it is probably accurate enough to take for it figures for a rectangular plane of aspect ratio 2 to 1.

As we do not know until after the calculation the size for our tail plane, we do not know exactly the position of its line of reaction. But the chord of the tail plane is fairly small compared to the distance from C.G. of machine to centre of pressure on tail plane, and smaller still is the *shift* of C.P. on tail plane compared to this distance. Hence we shall assume a point, say, 2 ins. above the top of the body and 2 ft. from the rear end of the body as the position of C. of P. on tail plane, and shall neglect the shift of C.P. Of course, if on finishing the calculation we find that, for the tail plane size which we shall need, our guess is obviously a lot out, we must alter up and correct our table.

We shall take the required area of tail for our machine—that is to say, area of tail plane plus area of elevators—as twice the greatest area called for in the table. This seems rather a libel on our calculations, but the reason for this apparent large excess of tail area is that the tail is acting both in the down-draught from the aerofoils and—when the engine is running—in the slip-stream of the propeller; both of these factors tend to decrease the alteration of air flow relative to the tail, when the attitude of the whole machine to its flight path is altered. That is to say, they both tend to decrease the correcting power of the tail.

This figure of half-value for the tail on the machine to Tail considered as in undisturbed air is approximately that found by recent experiments at the N.P.L.

Before leaving the question of longitudinal stability I would suggest that the value of total area of tail should be kept about as it would be found by the foregoing calculations for any machine, but the more the power of control required the greater should the relative area of elevators to tail plane be made. The ratio of elevator area to tail plane area should lie between the limits of .6 to .4 and .3 to .7. Outside these limits we shall get a machine either heavy on the controls on the one hand, or slow to respond on the other. We shall use, therefore, a total area of 75 sq. ft., of which .43, or 32 sq. ft., is in the elevators, and we arrive at the sizes as shown.

#### Directional Stability.

Very briefly, for "directional" or "yawing stability," for us this now means size of rudder and fin required. I say

rudder and fin for our machine, as I think it is safer to use a fin on large and heavy machines. On small and light machines it is perhaps not necessary. Structurally, of course, the employment of a fin is of value.

We have at present very few figures on which to base calculations for rudder size. The rudder and fin considered as a fixed surface must be large enough to counteract the inherent yawing instability of the body, also to counteract the yawing effect of the side surface of those parts of the landing gear which are ahead of the C.G., and also to counteract the yawing effect of the propeller considered as a front fin.

We must also be sure that, when the rudder is set at about 5 degrees, say, it has ample power *additionally* to counteract the worst spinning moment induced by working the warp or ailerons. Unless we have model figures for yawing moments on the fuselage, and for drift on an aerofoil with ailerons at different attitudes, we had better determine our rudder area from figures for other machines as nearly like ours as possible which we know were satisfactory as regards their directional stability and control.

I suggest, then, using an empirical formula (Fig. 13):

$$s \times d = C \times \left( S + \frac{A}{2} \right)$$

in which  $s$  = area of rudder in sq. ft.,  $d$  = distance of centre of area of rudder from C.G. of machine in feet,  $S$  is area of side elevation of body, landing-gear, and propeller in sq. ft.,  $A$  is area of aerofoils in sq. ft., and  $C$  is a constant which we shall take as .8 for a machine with a fin and .7 for one without, from figures for other machines of this type.

#### FORMULA FOR SIZE OF RUDDER (& FIN). FIG. 13

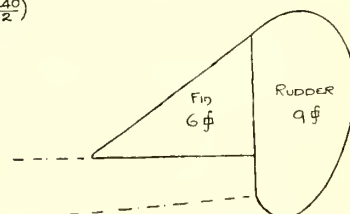
$$s \times d = C \times \left( S + \frac{A}{2} \right)$$

where:—  $S$  = Area of Rudder (& Fin) 19 sq. ft.  
 $d$  = distance of C. of Area of Rudder from C.G. 10 feet.  
 $S$  = Total projected side Area of M/c, less Aerofoils, 19 sq. ft.  
 $A$  = Area of Aerofoils 10 sq. ft.  
 $C$  = .8 where Fin used  
 = .7 " not used

For Design—

$$s \times 15 = .8 \left( 68 + \frac{440}{2} \right)$$

$$\text{or } s = 15 \text{ sq. ft.}$$



The value for body side area is the area in side elevation of body, complete with all added top superstructure, cowling round motor, etc.

In our case, then, we require a rudder + fin of 15 sq. ft. area, and we shall make it of form as shown.

#### Lateral Stability.

Finally for the dihedral angle we should give the aerofoils to attain necessary "lateral" or "rolling stability."

First, however, as to the causes for possession of, or lack of, "lateral stability" in an aeroplane. An aeroplane is a body immersed in a fluid—air—and since its average density is very great compared to that of air, we consider it as supported only by the reaction of the air upon its lifting surfaces. That is to say, it is supported solely due to its speed relative to the air.

Now, for both of the stabilities we have already discussed—that is "pitching" stability and "yawing" stability—the flight path is approximately at right-angles to the axes of rotation. Hence a small rotation immediately induces a change of reaction upon the tail plane, or rudder, as the case may be, which tends to counteract the rotation. But when we come to consider the third form of stability—that is, "lateral" or "rolling" stability—we see that the rotation now takes place about an axis which is parallel, or very nearly parallel, to the flight path.

Hence rotation about the longitudinal axis, or rolling, will by itself produce no change whatever upon the air reactions on the machine; that is to say, if an aeroplane rotate about



an axis parallel to its flight path, no other motion being present, no force is created to counteract the rotation.

However, when an aeroplane rolls other movements do occur, and it is from these that we attain "lateral stability."

Let us consider, then (Fig. 14), an aeroplane flying steadily

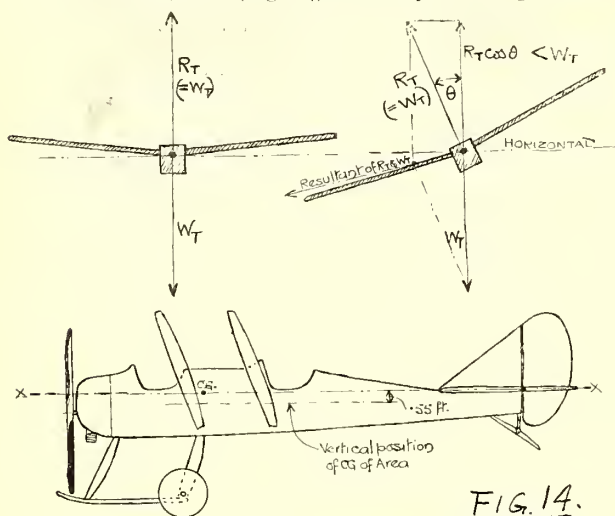


FIG. 14.

CALCULATION TABLE FOR VERTICAL C.G. OF AREA.

ITEM	A (ft)	h (ft)	A x h
Propeller	2.5	-0.9	-2.2
Cowl	4.0	-0.5	-2.0
Chassis front strut	1.0	-3.6	-3.6
" Rear "	.8	-3.0	-2.4
" Skid "	1.0	-5.2	-5.2
" Wheel "	3.8	-4.9	-18.6
Body below X-X	36.0	-0.9	-32.4
" above "	8.6	+0.5	+4.3
Aerofoil struts	4.8	+1.2	+5.8
Fir	6.0	+1.0	+6.0
Rudder	9.0	+0.9	+8.1
Tail skid	.6	-1.8	-1.1
TOTAL	78.1	-0.55	-43.3

A = side elevation Area of Item in ft.  
h = distance of Centre of Area of Item above or below Axis X-X  
+ Above  
- below.

and horizontally and assume that some outside force, say a puff of wind, rolls it over slightly. We see that, as speed and therefore total reaction,  $R_T$ , remain constant, and as the lift reaction is now out of line with the gravitational force, the vertical component of lift is now less than the gravitational force, and the horizontal component is unbalanced; that is to say, the machine will commence to drop and move sideways. Directly it commences to do this we get motion perpendicular to the axis of rotation and, if our surfaces are properly disposed, a righting moment therefrom.

Briefly, then, we see that, for "lateral stability," if the machine have a sideways velocity relative to the air, the resulting reactions on the whole machine must tend to raise the then leading aerofoil tip. This is the main reason why a dihedral angle for the aerofoils tends to give lateral stability. We also see that, if the outer shape of a machine remain the same, the higher the C.G. the greater the dihedral we shall need, and vice versa.

It is necessary for us, therefore, to calculate the vertical position of centre of projected side area of the whole machine less the aerofoils. I then suggest that, if this centre of area lie at the same height as the C.G., give 3 per cent. dihedral angle to the aerofoils. If the centre of area lie above the C.G., less dihedral should be given; if below, more dihedral should be given. These figures are quite arbitrary ones and I cannot vouch for their suitability. They approximately represent current practice for machines of this type.

As you will note, in our design the centre of projected side area is considerably below the centre of gravity, .55 ft.; so we had better decide to employ 5 per cent. dihedral angle.

We must note, before leaving the subject, that too much inherent stability should not be given to an aeroplane. "Inherent stability," as I have used it, being a tendency of the machine to retain the same attitude to its flight path or to its relative motion to the air, it follows that the more stable is a machine in this sense the more does it tend to follow alterations in wind direction, and this quality in excess makes for discomfort in flying and danger in landing. Hence we want to ensure that our machine has a slight margin of stability and that ample controlling power is afforded to the pilot to enable him to quickly alter at will its attitude in any direction.

(To be continued.)

## Two-tailed Aeroplanes.

The following letter has been received:—"Sir,—On page 84 of the current issue of THE AEROPLANE (January 27th) you illustrate one of the Italian machines of large size which are flying with two rearwardly pointing tails or fuselages, separated lateral masses, and other dispositions according to my inventions of patents 3848/13, etc. As you omit to mention that machines with two operative tails carrying rear elevator surfaces are of my type, are British in origin, and have been fully explained and described in their best forms in my shilling book, 'How to Understand Aeroplanes' (reviewed in your columns), and in my larger book, 'Aeroplanes in Gusts,' I shall be obliged if you will give this letter as much publicity as your illustrations and articles, and in your next issue.

"I should also like you to publish the natural request that allusions to my type be made more in connection with my name, and, on proper occasion, in connection with the books and patents which describe both them and the principles of action of their best forms. As regards the demand for such machines, I am prepared to license the manufacture of them in this country (on quite nominal terms for military and naval purposes), and to give every encouragement and service in connection with their use. I will, moreover, provide such machines to specified requirements and give the usual guarantees. The machines are, as my books have stated and as you yourself appear to agree, chiefly advantageous and indispensable in very large sizes. That is obviously one of the reasons for their late and unspectacular development.

"Feb. 3rd, 1915." (Signed) S. L. WALKDEN.

[One recalls a German aeroplane built some three years ago by one O. Trinks which had two fuselages, as had a Nieuport hydro-aeroplane of a somewhat later date. The Caproni illustrated has apparently only one tail.—Ed.]

## Fons et Origo

The following letter has been received:—

Sir,—My attention has been called to your article criticising Mr. de Havilland's new machine, designed for the Aircraft Manufacturing Co., Ltd. In that article you severely criticise the Royal Aircraft Factory, and this I think is hardly fair, as although the machine is due to Mr. de Havilland, I am sure that he would be the first to acknowledge his indebtedness to the knowledge obtainable owing to the experimental work carried out by the National Physical Laboratory and the Royal Aircraft Factory.—Yours faithfully,

(Signed) G. HOLT THOMAS (Managing Director).

The Aircraft Manufacturing Co., Ltd.

## For Those on Service.

Whitehead, Morris & Co., Ltd., of Caxton House, Westminster, S.W. have just produced two useful novelties likely to be a comfort to soldiers in the field. One is a waterproof letter wallet, containing writing block, pencil, and a supply of envelopes, and last but not least, a card entitled "French Made Easy." This contains a number of French expressions and their meanings, together with their phonetic spelling, which should enable any soldier who understands not the French language to ask at least for the necessities of life, in the following manner. Ex. 1: "Voolay voo donnay m'wah seal voo play p'wahsong?" Ex. 2: "Commong tallay voo? Tray beaang; ay voo?" The price of this article is but 6d.

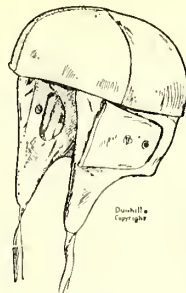
A companion waterproof wallet contains a thick pad of shaving paper, and this costs 3d. A clean razor wipe is not to be despised where there is so much dirt and infection to be contended with. Wallets of a rather better quality may also be purchased at 1s. and 1s. 6d. It is probable that friends of officers and men in the R.N.A.S. and the R.F.C. will be glad to include these useful articles in their next parcels abroad.

**Kit for Aviators.**

The accompanying illustration shows an aviator's helmet made by the famous firm of Dunhills, Ltd., who have long been recognised as the leading specialists in motor equipment, and who have, since the earliest days of aviation, devoted a considerable amount of attention to the equipment of aviators. The helmet shown is certainly calculated to enhance the safety of the wearer. Earflaps are fitted, and there is a raised forehead protector so that the pilot is guarded against the frequently painful, and sometimes serious, accidents which occur merely through careless landings. Against the more serious shock of being pitched out of the machine onto his head, the pilot is protected by an air bag fixed in the crown of the helmet, which effectively deadens the force of the heaviest blow. The outside of the helmet is made of the best stiffened hide.

Some aviators, who believe more in luck than in proper precaution and prefer their personal comfort to the trouble of accustoming themselves to the wearing of a helmet, still use a tight fitting skull cap of the type usually associated with Puck. Dunhills, Ltd. make an excellent cap of this kind, which is made of soft leather lined with silk or fleece. In a praise-worthy effort to protect the valuable lives of their customers, the firm fit a thick felt lining to the crown of the cap, so that small and light as it is, it will protect a moderately thick skull against the consequences of its thickness. Apart altogether from aviation the small skull cap makes excellent head-wear when motoring in severe weather.

The fleece-lined garments made specially for aviators by Dunhills, Ltd. are well worthy of attention by officers just appointed to either Service. The leather coat lined with fleece, which is




quite one of the firm's specialities, can be had either in brown leather for military wear, or in black for naval pilots. The coat is irreproachable in cut, so that it has all the smartness of uniform made by the best tailors, and the material and workmanship are excellent.

Various other garments made by the firm are also worthy of attention, among them in particular the silk-skin waistcoat illustrated elsewhere. Being impervious to wet and wind, and lined with flannel, it is a comforting present to any officer or man on home or foreign service, and it is so made that it can be worn under an ordinary service tunic.

**A Move.**

The Grahame-White Aviation Co., Ltd., have found it necessary to acquire larger and more commodious West End offices. They have, therefore, moved to spacious premises at 32, Regent Street, S.W. (adjoining Piccadilly Circus), and their telephone number is now Regent 4423.



# THE SEAPLANE SCHOOL

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wish to emphasize this week. You will find that we neither follow fashion nor precedent. We create them. We do the things which spell efficiency, and we create or secure the things to spell it with. Whether it be a new type of machine, like our propeller monoplane, or merely an improved means of launching; whether it means teaching by moonlight, or a new method of changing crews while running on the water, they all sum up into time-saving efficiency. These are but a few things, but they serve to indicate that we are alive and keen, and up-to-date to the last minute. Send for our book, it tells you all about us.

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### A Doubtful Casualty.

Apropos the report which appeared in the "Telegraph" on February 4th, the "Morning Post's" local correspondent writes on February 5th:—"Nothing is known at Sheerness of the reported discovery by a fisherman in Black Deep of the body of a German airman with a shrapnel bullet in his lungs—supposed to be the German airman who flew over Sheerness on Christmas Day. There has been a general belief at Sheerness that the hostile aviator never reached the Belgian coast on his return voyage across the sea, for his machine is known to have been 'winged' by shots from the anti-aircraft guns at Sheerness, and so far as is known no particulars of his aerial invasion of Sheppey and of his fight with British seaplanes over the Medway valley have appeared in the German Press. The only announcement known to have been made by Germany was the repetition in their wireless news of the report (published through the Press Bureau in London) of the Fortress Commander at Sheerness that a hostile aeroplane had passed over Sheerness.

"It is noteworthy that in the report which appeared in a London newspaper no particulars are given as to where the body was landed or of an inquest taking place, or of a post-mortem or where the body was buried. The report indicates the body was found a few days ago."

The Clacton and Southend correspondents of the "Morning Post" also report that nothing is known there of the finding of the German aviator's body.

### A Romantic Wedding.

Upon the outbreak of war, M. F. van Droogenbroeck, an engineer, joined the Belgian flying corps, and did most useful work, being complimented by his King for his invention of a new bomb. Whilst flying at Nieuport his machine fell 60 metres and he was seriously injured.

In the meantime his fiancée had fled from Antwerp, and for a long time he could find no trace of her. Coming to London he found she was receiving hospitality at Farnham, where their wedding was celebrated. M. Droogenbroeck has been invalided out of the army, and is resuming his profession in London.

### The Running of Aero Engines.

The Editor of THE AEROPLANE will be glad to consider articles on modern aero-engines written by practical men with a knowledge of their subject. Such articles should deal either with the general design and construction of engine, or, preferably, should consist of detailed descriptions of the internal economy of specific engines with which the writer is well acquainted, and should give as much information as possible concerning the manners and customs of the engines under various conditions of use. Any articles accepted for publication will be paid for at our usual rates when they appear.

Mechanicians working on aeroplane engines are also invited to send in notes, short or long, describing any useful hints and tips they may have discovered which add to the reliability or efficiency of the engines, or assist in quick dismantling or assembling or tuning. In this way it is hoped that the general store of knowledge may be enlarged, and thus the

work of our pilots may be rendered safer, through the increased reliability and efficiency of their engines.

When possible, sketches, rough or finished, should accompany the notes. Literary style is no particular recommendation, for practical experience plainly expressed in the language of the workshops is more needed in this instance.

All notes published will be paid for, the minimum payment being 5 shillings for short notes.

### Southampton and District.

On Thursday a Sopwith Sunbeam-engined tractor seaplane recently handed over to the Navy was towed up to Woolston for repair, after a collision with a pier. During a short calm on Sunday morning a Sopwith tractor made a flight over Southampton Water. When weather permitted the usual observation flights have taken place on various machines, the majority being Sopwiths.

### A New Aeroplane Firm.

The works at Gould Road, Twickenham, formerly occupied by the Perry Aviation Company, have now been taken over by the Jouques Aviation Company, and are hard at work.

### School and Weather Reports.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
South Coast ...	Fine	Rain Windy	Show'y Windy	Dull Windy	Fine, a.m. Wet p.m.	Wind & Rain	Rain & Wind
East Coast ...	Fine	Wet	Fine	Fine	Fine	Wind & Rain	—
Hendon ...	Fine	Wet	Windy	Windy	Fi	Wet	Fair
Lake District	Fine	Rain	Rain	Gale	Gale	Fine	Rain

**Hendon.**—AT THE GRAHAME-WHITE SCHOOL.—Instructors: Messrs. Manton, Russell and Winter. Pupils with instr.: Prob. Flt. Sub-Lieuts. Irving, Petter and Tollemache (new pupil). Strts. alone: Prob. Flt. Sub-Lieuts. Souray and Wood. 8's or circs. alone: Prob. Flt. Sub-Lieuts. Digby, Hallifax, Hilliard, Petter and Wood. Certificate taken: Prob. Flt. Sub-Lieut. F. Digby. Machines: Four Grahame-White biplanes.

AT THE HALL SCHOOL.—Instructor: Mr. J. Rose. Pupils with instr.: Mr. McConnochie (10 mins.), Mr. Davy (5), Mr. Waterson (10). Machines: Hall tractor biplanes. Two new pupils, Lieut. Moncrieffe and Mr. J. Furlong, joined the school.

AT THE BEATTY SCHOOL.—Instructors: Messrs. Geo. W. Beatty and G. Virgilio. Pupils with instr.: Messrs. P. E. Cornish (25 mins.), G. Beard (25), G. Perrot (20), T. F. Roche (5), B. de Meza (15), M. J. V. Miller (20), J. H. Ormsby (15), A. G. Hayward (12), H. H. Bright (38), F. R. Laver (22), J. H. Moore (20). Machines: Beatty biplanes with dual wheel control.

AT THE RUFFY SCHOOL.—Instructors: Messrs. Edouard Baumann, Herbert James and Howard James. Pupils: Messrs. Aoyang, Grahame, Kenworthy, King. Mr. Kenworthy making good progress. Machines: 60-h.p. Gnome Caudron dual control and 45-h.p. Anzani.

AT THE LONDON AND PROVINCIAL AVIATION Co.'s SCHOOL.—Instructors: Messrs. M. G. Smiles and W. T. Warren. Pupils doing straights: Messrs. Noakes, Lincoln, England, Derwin, and White; half circuits, Mr. Bransby Williams. 8's or circs.: Messrs. Moore, Abel and Laidler. Machines: Two L. and P. tractor biplanes.

**Windermere.**—AT THE NORTHERN AIRCRAFT Co.'s SCHOOL.—Instr.: Mr. W. Rowland Ding. Pupils with instr.: Messrs. G. L. Railton (15 mins), R. Buck (31), A. Johnson (54), S. J. Sibley (8). Strts.: Messrs. R. Buck and A. Johnson. 8's and circs.: Mr. R. O. Lashmar. Machines: N.A.C. propeller biplanes and monoplanes. An illustrated lecture was delivered by Mr. C. Fleming Williams on construction and design.

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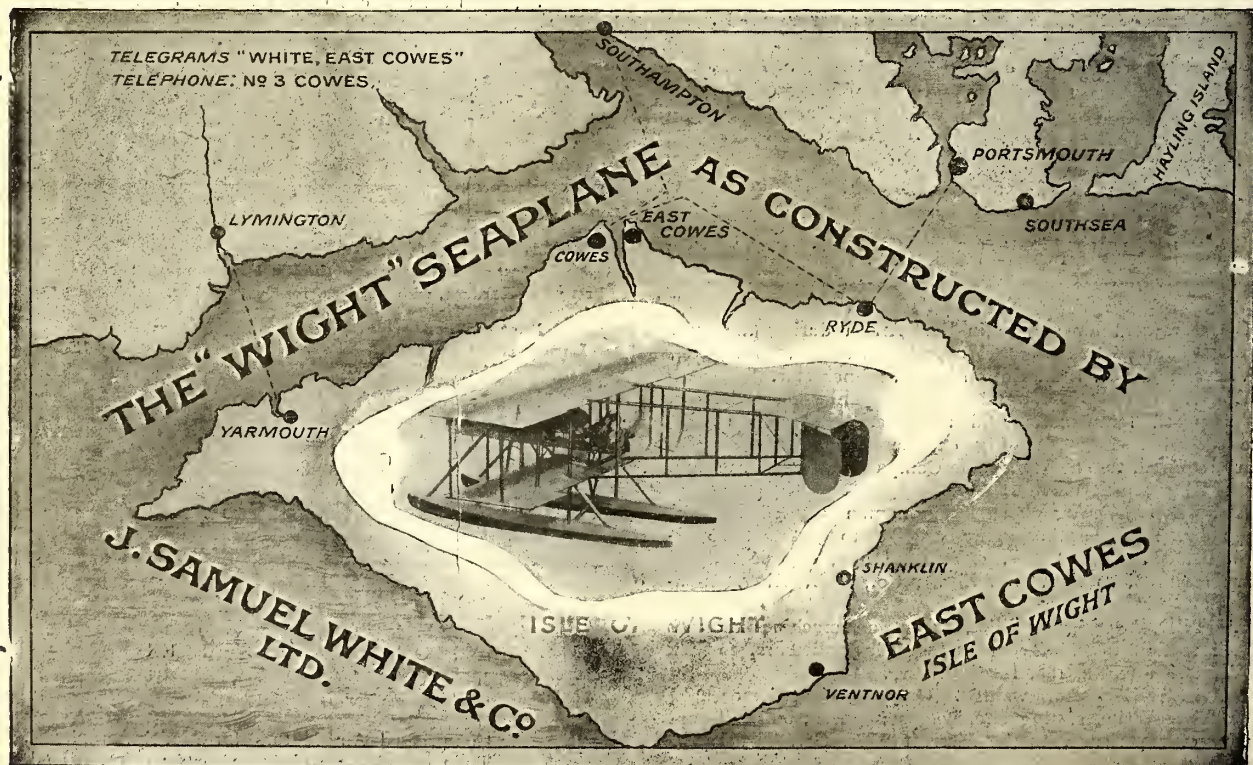
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# THE AEROPLANE

*Edited by C. G. GREY. ("Aero-Amateur")*



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WEDNESDAY, FEBRUARY 17, 1915.

No. 7

## WHAT IS IT?



Above is shown a biplane, more distinctly than it would be seen at 6,000 feet or so, yet even the expert would be puzzled to say at first sight whether it was British, or German, or even French. Of what use, then, can Home Office posters be to the Public in general? There is nothing in it even remotely resembling the machine shown above, which is a modern Albatros.



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## Efficiency versus Effectiveness.

During the last few weeks this office and its neighbourhood, which includes the Royal Aero Club, has been full of argument, some of it on paper, some of it verbal, some of it telephonic, some of it civil and logical, and some of it abusive and impressionistic, concerning the merits and demerits of aeroplanes of various types, British and foreign, friendly and hostile, when regarded as instruments of war.

Now, because most people concerned with aeroplane design and construction have always been tied down to certain limited engine powers, one finds in these arguments a constant tendency to estimate an aeroplane's merits for war purposes on its efficiency instead of on its effectiveness. There is a vast difference between the two qualities which some people seem incapable of understanding, and a great many other people entirely forget. To appreciate the difference one must start the argument with some definite idea of what a machine has to do in order to be effective, and to estimate what that task is one must have a general working idea of what is a fair average performance for one's enemy's machines to do. Then one can formulate a programme to beat them.

In our case we can reckon that the old-fashioned German "Taube" type monoplane with a speed of 60 miles an hour and a climb of about 300 feet a minute is now out of date, if not absolutely extinct, and that the new German biplanes of the L.V.G., Aviatik, Albatros, and Rumpler type can raise a speed of anything between 70 and 80 miles an hour, and can climb between 600 and 1,000 feet a minute according to whether they are fully loaded or not, and allowing for variations in different engines, or different states of the atmosphere.

Therefore, to be effective, from our point of view, our machines must be able to beat that speed and climb, or, as a possible alternative, they may fly and climb somewhat more slowly, but they must be able to carry sufficient armament to beat off attack. Thus a slow well-armed machine may go out over the enemy's lines and beat off any enemy who tries to prevent it from gathering information, or it may be used for patrol duty over its own lines to head off hostile machines which approach while it is in the air. But it must be remembered that such a machine, if on reconnaissance, may have to descend in order to acquire desired information, and so may place itself at the mercy of a quick-climbing enemy, and if actually in the air on patrol duty it may be out-climbed by an approaching scout. In the latter case, it may prevent the enemy from acquiring information, but it does not fulfil its purpose of destroying the enemy, and so it fails to be really effective.

An officer who has been in the thick of the aerial work of the war for some months, writing home recently on this particular subject, remarked, "Faster climbing power is needed, for it gives an incalculable advantage in manoeuvring for position to shoot, and to keep more or less in an awkward position for being shot at." Some pilots prefer to get above their enemy and shoot down at him, and some prefer to charge up at him from below so as to get a fair shot at his engine, but in either case the man on the faster climbing machine always has the advantage in that he can

choose his own position. For defensive work, especially, climbing speed is even more important than flying speed, and in a force in which the duties of the various pilots and their machines were clearly defined and organised there would be a very distinct difference between defensive aeroplanes and simple scouts in this respect, for with the same engine power one could produce a series of armed and armoured "defenders" which climbed quickly, and another series of very fast reconnaissance machines which would never fight, but would rely on their speed to get their information and run away home with it.

### Effective Climbing.

At present no army in the world has definitely laid itself out to produce two types distinct in this way, though various subsidiary types for special purposes have been built. Even the Germans, who have by far the most complete organisation, and—*pace* General Seely and the Royal Aircraft Factory—probably "the best brains in the world" where the development of military aeronautics is concerned, seem to have concentrated the energies of their constructors on one type of machine—not one theoretically efficient Government design, but on various independent designs of a probably inefficient but highly effective type, namely, the big tractor biplane with a six-cylinder fixed engine of 100-h.p., or slightly more.

It is, of course, true that all armies have gun-carriers of various sorts, besides reconnaissance machines, and fast scouts, but no one seems to have deliberately sacrificed speed for climb, or climb for speed, and the result has been numerous machines of good all-round efficiency, though none has been quite as effective as it might have been for certain definite purposes.

### Effective Speed.

However, to return to the original question of effectiveness versus efficiency, perhaps one may put it this way—supposing one maker produces a highly efficient machine, which, with an engine of 70-h.p., is capable of doing 80 miles an hour, and another maker produces one which carries the same useful load and does 90 miles an hour, but needs 100-h.p. to do it, the latter machine is obviously the more effective, though equally obviously inefficient. One may put anything over 85 miles an hour down as a fair effective speed, because, though some few German machines may exceed it, they are few and far between, and German pilots fit to fly them are scarcer still.

We have recently been informed, with much flourish of trumpets, that the B.E.2c does 80 miles an hour with a 70-h.p. Renault, and that it is also inherently stable. Naturally, no one will deny that the machine is therefore efficient. Unfortunately, the paper which announced the fact—being inclined to set store by official aeronautical theories rather than military practice—omitted to mention that the speed was only attained by fitting streamlined wires and a stripped chassis, and so may have raised vain hopes in the breasts of such young officers as may trouble to read aerodrome gossip.

Now, streamlined wires, like most other swaged wires, are much more liable to break than are stranded cables, and when they do break they give no warning of their intention. Further, it is much more difficult to



make a reliable or even a satisfactory attachment for them. Also, official tests have shown the danger of these wires breaking under vibration as distinct from shock loading—sometimes they break after only a couple of hours' test on a vibrator—and one pilot, at least, has noted how, when the speed of the machine varies during a glide with the engine stopped, first one wire and then another sets up a loud and distinct note due to vibration, the note varying with each wire, and, of course, with the speed.

It is a pity that the highly theoretical supporters of the machine omitted to mention these drawbacks, and also omitted to mention that the chassis was such as would only be safe in a landing under the control of a highly skilled pilot, because, for practical military purposes both these points render the machine ineffective, for the danger of breakage in the air and the danger of a smash in landing on rough ground are quite sufficient to cancel out any advantage in sheer efficiency.

If these defects are remedied by fitting ordinary cables and a standard chassis, the speed promptly drops to something under 70 miles an hour, so wherein lies the boasted efficiency? Let us have tests with machines built by other manufacturers and fitted with racing chassis and streamlined wires, and then we can compare efficiencies alone without troubling about effectiveness. But even so, the Avros which carry the same useful load do 84 m.p.h. with an 80-h.p. Gnome—which, according to Mr. Barnwell's engine-table, published recently, only gives 68 h.p. on the brake—in spite of a big central skid and stranded cables, so where does the efficiency come in?

#### Effective Strength.

I am quite aware that certain Avros which have been altered to meet the requirements of the theorists at Farnborough fall short of the original Avro performances set up early last year; but the fact remains that none of those built to the original designs have broken in the air, and that those used on active service have stood up to rough usage and exposure. Even those which have been hit in seemingly vital places, such as spars and struts, have got home safely, so that one is forced to believe that, despite its apparent lightness of construction, the theoretical design is adequately strong—so long, of course, as the purely practical requirements of workmanship and material are kept rigidly at the highest level.

Moreover, external stoutness does not necessarily mean strength, for a heavy strut may cause a light spar to break, whereas if both had some degree of flexibility both might stand up. There is still much to be learnt about flexible construction, and it seems reasonable to suppose that in so elastic a medium as air a flexible structure may well be more efficient than a rigid one. Apparently theory alone cannot calculate for structural flexibility, which is a quality to be discovered only from practical experience. The subject is one of great interest, but the process of experimentation is apt to be costly.

#### Effective Stability.

It may be objected that 70 m.p.h. plus inherent stability with a 70-h.p. engine shows high efficiency. Again the argument is admitted, and again I would point out that what is needed is effectiveness.

Let us consider the value of stability in war. The chief argument in favour of stability is that on a long journey the pilot can leave the machine to itself, and—provided he is not subject to air-sickness—he may let it roll about as it likes without fear of a nose-dive or a capsize. Thus he is saved from tiring himself, so long as he is content to let it roll, but I am told by practical pilots that if one tries to control a stable machine it is desperately tiring.

No one has written more in favour of inherent stability from a practical point of view than I have done, and no paper has published as much about the practical and theoretical methods of obtaining stability as has this paper. I believe in the need for stability

as strongly as ever, but not when it is bought at too high a price in time of war.

The chief advantage of stability is on a long journey. Now consider the case of a scout who sets out on a long reconnaissance far behind the enemy's lines. On his 70-mile-an-hour inherently stable machine he arrives unfatigued 50 miles behind the enemy's lines. He obtains his information and sets out for home. On his return he is waylaid by a couple of 80-mile-an-hour machines which climb faster than his own. Then he is either shot or forced to land and is made a prisoner—still unfatigued, which is certainly an advantage if he has a long walk to prison before him.

The same man on a 90-mile-an-hour scout which is moderately stable and properly controllable will do his hundred-mile journey in faster time, he will be able to dodge his pursuers, and he will come home very tired, but with his information. Which appears the more effective proposition? The case in time of war is not at all analogous to that in time of peace, wherein a slow stable machine is better for the aerial tourist than a fast unstable one.

Also, there seems to be considerable misapprehension as to what stability really will do. Mr. Massac Buist, writing in the "Morning Post" some weeks ago, seemed to convey the impression that if all machines were inherently stable there would be an end to all accidents in landing. As a matter of fact, a powerfully stable machine is much more difficult to land than is an unstable one, for, as Mr. Barnwell pointed out, it will react to every gust which strikes it, and for that reason it is much more difficult to control near the ground, where the gusts are strongest and most irregular, which emphasises the need for a strong and effective chassis.

Further, if big control surfaces are fitted, so that the pilot can break down the stability whenever he likes, he is just as likely to make mistakes as on any other machine. If the machine has a stout and well-placed oleo-pneumatic chassis and is left to itself when near the ground it may strike at its proper gliding angle, bounce about a bit, and perhaps break a wing, but it is not likely to damage the pilot, which may be very useful to a wounded man, provided he retains consciousness and deliberately lets it go. But if he falls onto his controls and pushes his lever forward the machine will dive nose first—as witness the loop executed at Hendon recently by an R.A.F. pilot, which could not have been done without a preliminary dive.

Also, if a clumsy pilot pulls back too soon in trying to land he will stall the machine, which will either fall over sideways onto a wing-tip and cartwheel onto its nose, or it may hang a moment and then dive onto its nose in its natural endeavour to recover its speed. And, be it remembered, a nose dive of only 40 or 50 feet in this way is quite enough to smash the machine and probably kill or seriously injure the crew, for the machine depends on attaining a certain speed through the air, either by engine power or by the force of gravity during a glide, before the forces which cause its stability become operative.

In connection with the current inherently stable design there is one important point worthy of note. The longitudinal stability is of that type which depends on pressure *on top* of the tail to keep the nose up. When the engine is running this pressure is supplied by the slip-stream of the propeller directed downwards by the planes. When the engine stops the nose, being heavy, drops and the speed through the air increases till the downward stream from the planes causes the same pressure as did the slip-stream. Thus, if the engine is switched off after a dive is started, there may be considerable time lag before the tail goes down and the nose comes up. If the engine stops when flying fairly near the ground there is danger of this lag causing an ugly smash.

It is hoped that these few words of warning may

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help to save the limbs, if not the lives, of some young pilots who are apt to believe that, just because a machine is labelled "inherently stable" by people who occupy high official positions, it therefore knows more about flying than they do.

#### A Matter of Policy.

One correspondent wants to know why I am "so down on" B.E.s in general, and suggests that I may have had a trip in one and have made a bad landing. Others also do not seem to understand the position, so it seems that I must explain once more, for the benefit of new readers apparently. Imprimis, the whole policy of this paper is dictated by the desire to ensure that the Royal Naval Air Service and the Royal Flying Corps shall have a plentiful supply of the best possible aeroplanes on which to do their work. Unfortunately, they have never, until the war broke out, had anything like an adequate number of machines, and those they have had were not always of the best quality. To-day these matters are being put right, but in the past there was much to be desired, almost entirely because a certain clique at the Royal Aircraft Factory, backed by political "pull," set out deliberately to exalt themselves at the expense of what the Press agent of the clique contemptuously calls "the trade," the obvious idea being that if the trade could be pushed out of the way the whole supply of aeroplanes would be drawn from the R.A.F., and that establishment would become a huge Government dockyard, full of well-paid officials. This would obviously be to the disadvantage of the Services, for the removal of competition with the trade would remove the chief impulse towards progress.

The early efforts of the R.A.F. were abject failures, and it was not till Mr. de Havilland produced the original B.E.2, built entirely under his own personal supervision early in 1912, that any success was attained. This machine beat anything else in the world at the time for all-round effectiveness, as well as theoretical efficiency, and this paper made itself very unpopular with the trade by saying so, and by telling the trade that it must "get on or get out."

Then the clever theorists got hold of the B.E.2, which was admitted by its producer to be an experiment, and they tried to induce the War Office to standardise it. They induced certain firms, who had been unsuccessful as designers of their own machines, to make B.E.2s, and they endeavoured to produce drawings for their benefit. Like all R.A.F. drawing-office work, the drawings were full of mistakes, which necessitated expensive alterations in machines already almost finished, and caused enormous delays in deliveries. All the constructional defects in the original machine were carefully reproduced, and many others were caused by that kind of bravery about constructional details which is so common in drawing-offices. Also, various other B.E.s were produced for which the designer of the B.E.2 was not responsible.

As a result sundry B.E.s broke in the air, certain officers were killed, minor accidents happened also, and in the end, after much agitation, led by this paper, the Army insisted on the machines being strengthened at various points. The machine remained a good flying machine, but it was badly beaten both by the Sopwith and Avro, which had by then been greatly improved. Nevertheless, orders were not given for these machines in quantities anything like as great as those given out for B.E.2s.

Then, because officers found the B.E.2 draughty and less comfortable than other makes, the B.E.2b was produced with a more enclosed body, but with a marked tendency to "spin" if not flown with care. Still, both these, in their altered state, are good, useful, efficient machines, but too slow to be effective in war, except for limited flights near home. And now we have the B.E.2c, a wonderfully efficient inherently stable machine, but one which, apart from being ineffective as a war machine, is by no means beyond criticism

constructionally, and is so unnecessarily complicated to build that it decreases by fully a half the output of any firm contracting to build it—so that it definitely decreases the supply of machines available.

Besides these, the R.A.F. has produced the fatal F.E.2, one of the worst aeroplanes ever thought of, which has been easily beaten by the Vickers gun-carriers and the new "de H.1."; also sundry S.E.s, which with enormous engines developed enormous speeds at enormous risk to the pilots. I gather, however, that the latest types may be flown with some hope by really expert aviators. These, of course, are the official replies to the various Sopwith, Martinsyde, and Bristol "tabloids." The R.E.s, which are somewhat like badly made German biplanes, big and heavily engined, are fairly fast and climb well, but they are awkward and tricky to fly, and are bad to land and bad for scouting purposes. So, taking it all round, it is difficult to see what anyone with the good of the Flying Services at heart could do except be "down on" the R.A.F.

If a private firm had only done as much one might be more lenient, but it must be remembered that these people have had the spending of many tens of thousands of pounds of public money, that they have tremendous political "pull," which has enabled them to get themselves advertised, even in Parliament, as "the best brains in the world," and that they have used their power to discredit everything the "trade" has done, so that they might be aggrandised thereby. Yet their products have every one been beaten by the despised "trade." The poor soldier who merely has a practical knowledge of his job is, of course, not listened to when these scientists start arguing with the higher authorities about what the Army should or should not buy. Even the opinion of a civilian pilot who is paid to fly the R.A.F.'s products, and who knows little of engineering and less of military requirements, is sometimes considered of greater value than that of soldiers who know what is needed for their work.

They have never originated a new type of aeroplane, and all their endeavours have been directed to futile efforts by all kinds of subterranean methods to oust their rivals, instead of defeating them by fair means. So futile is the management of the concern and so offensive are the superior officials that a self-respecting man can hardly remain in the employ of the establishment more than a few months. Over and over again I have been asked to find jobs for really good men from the R.A.F. who have left because they refused to draw money for the kind of work they were supposed to do. Nearly all the best people cleared out about a year ago and are now doing good work for other firms, but if any manufacturer advertises for hands he is always flooded with applications from the R.A.F.

Even the simple-minded and trustful War Office lost some of its confidence in the clique and started the Aeronautical Inspection Department, under military control. Yet the R.A.F. is still something of a power in the land and can apparently fill new firms up with contracts for machines of its own design, when they might be better employed on building to better designs. It can even create corners in certain engines which might enable rival aeroplanes to beat its own efforts, and so long as it has such power to obstruct progress it is one's duty to the Services to do one's best to break that power and the wrongfully acquired reputations of the gang who run the place for their own benefit.

As an honestly run experimental establishment the R.A.F. might be of the greatest assistance to the progress of aviation. As an honest competitor of the "trade" one might, at any rate, respect it. But as the centre of a self-advertising, self-aggrandising ring, who are out for their own ends, it is a drag on progress and a danger to the Services, for it is neither efficient nor effective.—C. G. G.



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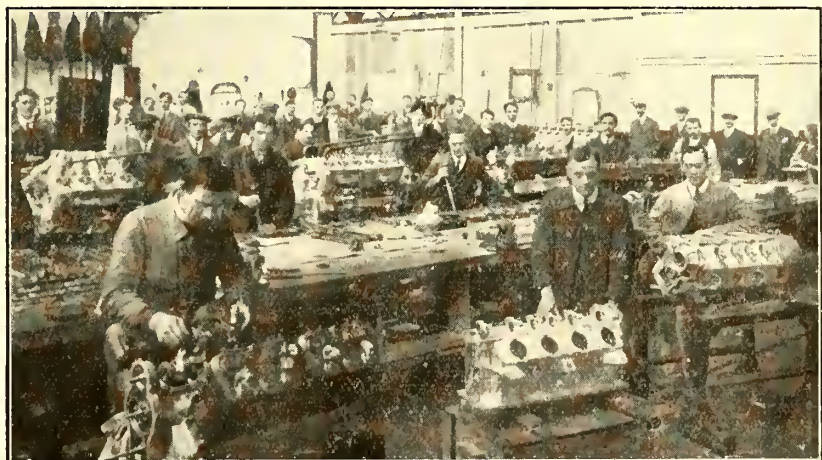
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## Naval and Military Aeronautics.

### GREAT BRITAIN.

From the "London Gazette," February 9th, 1915.

ADMIRALTY, FEBRUARY 4TH.

ROYAL NAVAL AIR SERVICE.—The undermentioned probationary flight sub-lieutenants have been confirmed in the rank of flight sub-lieutenant: Philip Charles Vere Perry. Dated August 18th, 1914. Edmund Ivan Montfort Bird. Dated October 5th, 1914. Eric Fabricius Bray. Dated October 7th, 1914. Eric John Hodsoll. Dated October 7th, 1914. Charles Henry Chichester Smith. Dated October 27th, 1914. John Callaghan Brooke. Dated November 2nd, 1914. Thomas Hinshelwood. Dated November 23rd, 1914.

FEBRUARY 5TH.

ROYAL NAVAL AIR SERVICE.—Flight Sub-Lieutenant John Martin D'Arcy Levy to be flight lieutenant. Dated February 1st, 1915.

ROYAL NAVAL VOLUNTEER RESERVE.—Temporary commissions in the Royal Naval Volunteer Reserve have been issued as follows:—

Lieutenant-Commander.—Edward Nicholl.

Lieutenants.—Allan Livingstone Bligh, Howard Moncaster Whitley, John Arthur Cecil Scott, Cecil Strickland, Herbert Octavius Mock, A. F. Masters, Barrington Stoptord Conygham Greene, Thornton Haggerston, A. H. Barrett, Laurence Mac-Brayne, Archibald Low, James Cadman, John Kenneth Rankin, William John Gordon, Harry Edward Denis de Vitre, James Arthur Adie, Arthur John Frederick Nicolson, Thomas Mountford Adie White, Harry Stanley Nicolson, Lionel Rutherford Nicolson, William Simpson, Walter Moffitt Marks, and Percy Cecil Thurburn.

Sub-Lieutenants.—John Morrissey, Ralph Hobhouse Thomas, John Ambrose Lloyd, Arnold Bishonden, Archibald F. Stevenson, George C. Gibson, Frederic C. Mundy, Clifford A. T. Dewhurst, John A. Tremayne, Wilfred G. Chancellor, Frederick J. Matthews, Robert Ritson, Henry F. Morris, Frank Mayne, Howard W. Little, Gordon H. Southon, Harold H. Rush, Ivan Heald, Sidney H. Fish, Arnold L. Dugon, Herbert Green, John C. Forster, James C. Hilton, Charles C. Wise, Horace C. Lomer, Guy P. Holden, Adair G. Bagshawe, Geoffrey Winwood Robinson, John Forster Hedley, Leonard Barr, Edward Errol Maitland-Heriot, Edward Nanny Grave Morris, Richard Dyson Seddon, R. J. Daniels, Allan Crombie, John Strachan, George Irving, Charles Aubrey Burleigh Powell, Arthur Gilbert Hordern, David Allen Macleod, and Frederick John Morgan.

The following temporary commissions have been cancelled:—Lieutenant Farnall Thurston and Sub-Lieutenant Joseph Morgan.

WAR OFFICE, FEBRUARY 9TH.

REGULAR FORCES.—ESTABLISHMENTS.—INFANTRY.—THE LANCASHIRE FUSILIERS.—Quartermaster-Sergeant Henry Edward Chaney, from School of Musketry, to be second lieutenant and is seconded for service with the Royal Flying Corps. Dated February 10th, 1915.

\* \* \*

A Supplement to the "London Gazette" of February 9th, published on February 10th, contains the following military appointments:—

WAR OFFICE, FEBRUARY 10TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—The undermentioned appointments are made:—Flying Officers.—Dated January 1st, 1915: Second Lieutenant E. G. S. Walker, Special Reserve, and Second Lieutenant F. W. Polehampton, Special Reserve.

RESERVE SIGNAL DEPOT.—The undermentioned appointment is made:—Chief Instructor—Lieutenant-Colonel Edmund G. Godfrey-Faussett, Royal Engineers. Dated January 9th, 1915. (Substituted for the notification which appeared in the "Gazette" of January 15th, 1915.)

[The functions of the Reserve Signal Depot do not appear, but as the announcement is placed in the "Gazette" under the R.F.C. heading, and before the Royal Regiment of Artillery, one is left to assume that it pertains to the R.F.C.—Ed.]

From the "London Gazette," February 12th, 1915.

ADMIRALTY, FEBRUARY 8TH.

ROYAL MARINE LIGHT INFANTRY.—Captain and Brevet Major Eugene Louis Gerrard to be temporary lieutenant-colonel while holding the rank of wing commander in the Royal Naval Air Service. Dated December 31st, 1914.

Captain Charles Edward Henry Rathborne to be temporary major while holding the rank of squadron commander in the Royal Naval Air Service. Dated December 31, 1914.

FEBRUARY 11TH.

Lieutenant William Thomas Hicks has this day been promoted to the rank of lieutenant-commander in his Majesty's Fleet.

WAR OFFICE, FEBRUARY 12TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—The undermentioned appointment is made:—Flying Officer—Lieutenant A. J. L. Scott, Sussex Yeomanry, Territorial Force. Dated February 1st, 1915.

SUPPLEMENTARY TO REGULAR UNITS OR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—The undermentioned to be second lieutenants (on probation). Dated February 13th, 1915: Frank Widenham Goodden and Robert Hobart Mayo.

\* \* \*

A Supplement to the "London Gazette" of February 12th, published on February 13th, contains the following military appointment:—

WAR OFFICE, FEBRUARY 13TH.

REGULAR FORCES.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Second Lieutenant (on probation) Julian P. Inglefield is confirmed in his rank.

NAVAL.

The following appointments were announced at the Admiralty on February 10th:—

ROYAL MARINES.—Captain and Brevet Major, R.M.L.I., E. L. Gerrard, to be temporary lieutenant-colonel while holding the rank of wing commander in the Royal Naval Air Service, to date December 31st, 1914.

Captain C. E. H. Rathborne to be temporary major while holding the rank of squadron commander in the Royal Naval Air Service, to date December 31st.

\* \* \*

The following appointments were announced at the Admiralty on February 15th:—

ROYAL NAVAL AIR SERVICE.—Messrs. J. S. Fleming Morrison and F. J. E. Feeny, entered as probationary flight sub-lieutenants and appointed to the "President," additional, for Royal Naval Air Service, to date February 9th; also R. A. J. Warneford and R. M. Everett, to date February 10th. Mr. F. G. Darby Hards, entered as probationary flight sub-lieutenant for temporary service and appointed to the "President," additional, for Royal Naval Air Service, to date February 10th.

\* \* \*

In his speech to the House of Commons on February 15th, the First Lord of the Admiralty, speaking of recruiting for the Navy, said:—

"We were also able to provide all the men that were necessary for the Royal Naval Air Service, which did not exist three years ago, and which is already making a name for itself—(cheers)—and is becoming a considerable and formidable body." (Cheers.)

\* \* \*

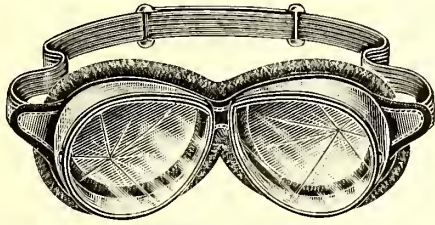
On February 12th, at 8 p.m., the Admiralty issued the following official statement:—

During the last twenty-four hours combined aeroplane and seaplane operations have been carried out by the Naval Wing in the Bruges, Zeebrugge, Blankenberghe, and Ostend districts, with a view to preventing the development of submarine bases and establishments. Thirty-four naval aeroplanes and seaplanes took part.

Great damage is reported to have been done to Ostend Railway Station, which, according to present information, has probably been burnt to the ground. The railway station at Blankenberghe was damaged, and railway lines were torn

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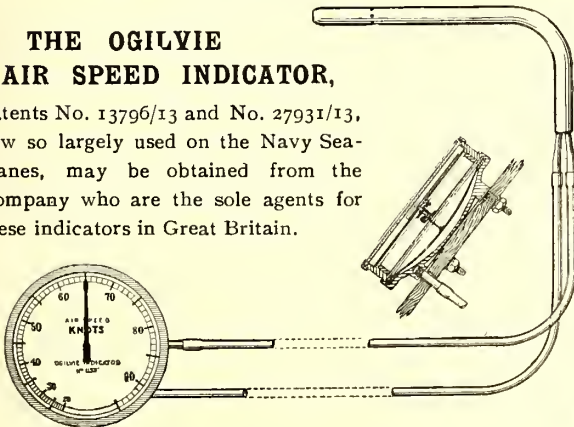
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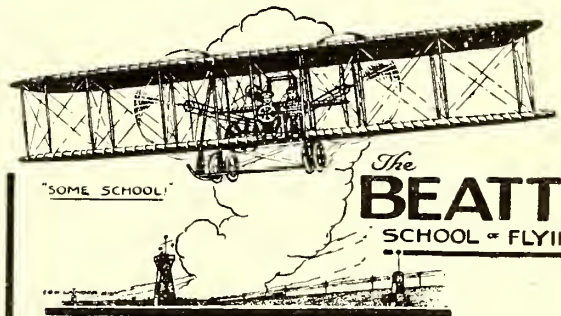
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up in many places. Bombs were dropped on gun positions at Middlekerke; also on the power station and German mine-sweeping vessels at Zeebrugge, but the damage done is unknown.

During the attack the machines encountered heavy banks of snow. No submarines were seen. Flight-Commander Grahame-White fell into the sea off Nieuport, and was rescued by a French vessel. Although exposed to heavy gunfire from rifles, anti-aircraft guns, mitrailleuses, etc., all pilots are safe. Two machines were damaged.

The seaplanes and aeroplanes were under the command of Wing-Commander Samson, assisted by Wing-Commander Longmore, Squadron-Commanders Porte, Courtney, and Rathborne.

#### PRESS OPINIONS.

The latest episode of the week's fighting, though not first in importance, deserves first place by reason of its remarkable character. The Naval Wing of the Royal Flying Corps, under Commander Samson, has just carried out a brilliant and successful attack on the Belgian coast.—(The "Times.")

This is the largest force of aircraft hitherto used in combination. Thirty-four machines were employed—a greater number of ships of the new era than Nelson had with his flag at Trafalgar.

Grand Admiral von Koester the other day expressed the fear that our sea service had lost the spirit of Nelson. We think this latest exploit may enable him to withdraw some of the sympathy which he, as an admirer of the British Navy, professed to entertain towards us in our hour of humiliation.—(The "Daily Telegraph.")

The British nation's pride in the magnificent daring of its airmen will be enhanced by the brilliant exploit which they accomplished yesterday. With the largest force of aircraft that has hitherto been employed in any one operation of war, they attacked the German submarine bases and depots along the Belgian coast.

The flight of the aeroplanes, telegraphs a correspondent, was the most wonderful sight in the history of flying. The number of aeroplanes taking part far exceeded that which took part in the great circuit of Europe race.

The previous greatest air raid was the one carried out by the Germans at Dunkirk on January 11th, when fourteen armoured Aviatik biplanes took part.—(The "Daily Mail.")

Altogether the raid is a great triumph for our Flying Service, and provides yet another proof of the wonderful ascendancy which British pluck, skill, and daring have gained in the air.

The latest exploit of the naval airmen exceeds in magnitude anything of the kind that has been attempted before. Never until this week had so large a force of aircraft been used in combination.

A new record in the use of aircraft for war purposes has been made by the British airmen who took part in the great raid on the German invaders of Belgium reported by the Admiralty.—(The "Daily Express.")

The air-arm of the British Navy got its blow in first by Friday's descent upon the enemy's bases along the Flemish coast. We sent out the largest force of air-machines ever yet used in combination. The Germans thought that approach to the English Channel would bring them within reach of Britain. They are learning what it means to come within Britain's reach.

The squadrons were under the leadership of Commander Samson, whose name has become a legend among the airmen of the Allies.

By far the most important inference to be drawn from the raid of 34 British aeroplanes on German military and naval works in Belgium is that we are rapidly increasing the size and capabilities of our "Fifth Arm," whilst the enemy makes no apparent progress.—(The "Observer.")

Commander Samson, again to the fore, in command of the whole of the operations; Wing-Commanders Longmore, Porte, Courtney, and Rathborne; Flight-Commander Grahame-White, too, fresh in his Naval honours, rescued from the sea, into which he fell—gallant officers all of them!—(The "Daily Chronicle.")

Every one knows the naval officer type of man—breezy, dogged, resourceful, self-possessed in all his bearing. Many know the airman type—daring, eagle-eyed, nimble-minded, swift of decision. Commander Samson is a blend of the two—a short well-knit figure, springy but sure in movement, with a brainy head set back with an air of command, a pair of the brightest eyes ever seen, and a short trim yellowish beard. . . . He seems to have the Frenchman's vivacity of manner mixed with the English sailor's solid judgment and all-round dependableness. In other words, he is the born air-conqueror, yearning for a new world to encircle like a modern Francis Drake of the air. His exploits this morning showed that the spirit of Drake is in the British sailor to-day.—(The "Daily Express.")

At the head of the raiding force was the well-known figure of Wing-Commander Samson, hero of many daring feats, and probably the greatest genius among all the Allies' air pilots. This bright, adventurous spirit, who lives, it would seem, for the joy of conflict, fills in the time between one air raid and another by dealing out destruction from the guns of an armoured train in Belgium or dashing into the enemy lines with an armoured motor-car. If it is not true, as reported, that the Kaiser has offered a big money prize for Commander Samson's head, then it might well be. The King is a great admirer of his skill and daring.—(The "Daily News.")

Among the other participants in the great raid mentioned in the Admiralty statement is Squadron-Commander Porte, the intrepid aviator who, just before the war, was engaged in preparing for an aeroplane flight across the Atlantic on a Glen-Curtiss machine.—(The "Daily Express.")

He (Flight-Commander Grahame-White) writes about flying with enthusiasm and uncommon literary skill.—(The "Daily Chronicle.")

[It was recorded in THE AEROPLANE of August 19th last, as a matter of history without decorative verbiage, that three squadrons of the R.F.C.—representing about 60 or 70 machines—had flown to France one day the previous week, and that in a space of less than two hours 37 of them were seen to leave the shore at intervals of less than three minutes. It was also noted that this procession had been going on for some time before our correspondent arrived and continued after he had left.

Those in touch with Service aviation know that the total amount of flying done in this much advertised raid would represent a fair day's work for a couple of squadrons of the Royal Flying Corps, which does not announce as a matter of national interest the name of any junior officer who happens to alight in the ditch. One hopes that this raid is not merely an exceptional effort, but is the first of a series of regular attacks in which much greater numbers will be employed.

Officers of the Royal Flying Corps are requested to note that the majority of officers of the Royal Naval Air Service are no more anxious for self-advertisement than they are themselves, and that many are advertised despite their own wishes.—Ed.]

\* \* \*

Among the Naval Gazettes of February 4th and 5th several names call for notice. Flight Sub-Lieut. Hinshelwood, confirmed in his rank, was remarkable at Brooklands as being one of the most promising pupils the famous Vickers School, under Mr. Harold Barnwell, ever produced, and he has the making of a brilliant pilot.

The R.N.V.R. list contains chiefly appointments and promotions in the Armoured Car Squadrons, and also the names of several officers attached for special duties to the R.N.A.S.

Lieut. Archibald Low will be remembered as the chief designer at Vickers Ltd. in the early days of aviation, and as an exceptionally fine pilot of Bristol before that. He is a mathematician of note, and has lately been concerned with stability calculations.

Lieut. Kenneth Rankin is another of the pioneers of aviation, having collaborated with Mr. James Radley and Mr. Stronach in the early Blériot experiments at Huntingdon.

The appointment of Lieut. Farnall Thurston as Flight Lieut., R.N.A.S., necessitates the cancellation of his R.N.V.R. commission.

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No. 1 Squadron, R.N.A.S., under Wing-Commander Longmore, R.N., has recently received a handsome gift from Mr. Maitland, of Witley Manor, Godalming, consisting of fifty pairs of snow boots. The gift is very highly appreciated by the men, for, owing to the continued wet weather, the various aerodromes at which the squadrons have to operate quickly become knee deep in mud, which is frequently of a most adhesive quality. The boots make it possible to walk in comfort, so the squadron wishes to make known its gratitude for Mr. Maitland's generosity.

#### MILITARY.

The following passages in the descriptive account, which has been communicated by an Eye-Witness present with General Headquarters, continuing and supplementing the narrative published on the 8th inst., deal with aircraft:—

February 5th, 1915.

On Wednesday there was some increase in the hostile artillery fire against our left and centre. One of our aviators dropped ten bombs on the aerodrome at Lille, which are believed to have been effective, while a German airman flew over Bailleul and threw two bombs without inflicting damage.

On Thursday, the 4th, the enemy's aircraft were very active, especially on the left, where they endeavoured to reconnoitre the positions of our trenches and batteries. As usual, however, their aeroplanes declined to engage ours and made for their own lines when approached.

The ascendancy obtained by our aviators was once again shown by an incident which occurred on this day. One of our machines endeavoured to engage two hostile aeroplanes, which thereupon turned towards home. They descended to their own lines; but their pursuer, determined not to be baulked of his prey, though they had reached their aerodrome, threw two bombs on them, then fired fifty rounds at them and flew away.

A German machine flew over Hazebrouck and dropped bombs which injured two women. A man who was cleaning a window had an extraordinary escape, for although the window was shattered and the interior of the room wrecked he was untouched.

The past few days have been fine and warm, and our aircraft have taken every advantage of the favourable weather. It has also enabled our artillery to obtain especially good results against the hostile batteries.

\* \* \*

The following passage in the descriptive account communicated by an Eye-Witness present with General Headquarters, continuing and supplementing the narrative published on the 12th inst., deals with aircraft:—

February 11th.

Wednesday, February 10th, was a very bright, clear day with little wind, and the interest centred on warfare above rather than on the earth. A large number of aircraft on both sides hovered over the battle line, and there were many encounters, in which our airmen maintained their usual superiority. The importance of this superiority can be imagined, for it means not only that the enemy finds it difficult to discover the dispositions and movements going on behind our line, but also that his artillery is compelled to work entirely by the map instead of by direct observation. His gunners can, of course, tell by the map the exact distance of the target, but the range to be given the gun is a factor which varies with the condition of the atmosphere and the wind, and therefore cannot be definitely ascertained without direct observation, and even after the most careful calculations have been made there is a possibility of error about this method, which there is no chance of correcting. There is also a discouraging sense of uncertainty as to the effect produced.

\* \* \*

The Casualty List, published on February 13th, contains the following correction:—

Officer previously officially reported Missing, now unofficially reported Not Missing: Lieutenant W. C. K. Birch, Royal Flying Corps.

\* \* \*

The friends of the late Mr. H. S. Keating, Irish Guards,

will learn with sincere regret that he lost his life in a bomb accident. He had been appointed "bomb officer" to his battalion, and a few nights before his death had led a most successful attack with hand grenades on the German trenches. When instructing his men in the action of throwing grenades, one which was supposed to be a dummy exploded and he was killed on the spot. A senior officer writing to his grandmother, Lady Ward, said, "The Army has suffered a great loss. Always cheery, no work was too dangerous for him. His men would follow him anywhere." One may add that he is as great a loss to the progress of aviation as to the Army, for there have been all too few young men of his temperament and position who have been as keenly interested in flying.

\* \* \*

A marriage has been arranged between Major the Hon. Claud Brabazon, Irish Guards and Royal Flying Corps, third son of the Earl and Countess of Meath, and Kathleen, youngest daughter of the late Arthur Maitland, of Shudy Camps Park, Cambridgeshire.

\* \* \*

Mr. F. W. Goodden, whose appointment as second lieutenant R.F.C. on probation is gazetted, will be best remembered as one of the Grahame-White Company's "star turns" at Hendon, along with Messrs. Carr, Lilywhite and Barrs. Subsequent to the death of Mr. Hamel he flew the deceased pilot's machine on an exhibition tour promoted by Mr. Etches of the Topical Postcard Company of Bournemouth. After the outbreak of war he joined the Royal Aircraft Factory's staff as test pilot, and has always succeeded in extracting the best results from their products. Prior to joining the Grahame-White Company he was chief pilot and instructor at the Caudron School, and gave many convincing demonstrations of the reliability of those excellent machines. Some years ago he built quite a promising little monoplane for himself at Oxford, and made several flights on it. Before that he worked for Mr. E. T. Willows on his little airships and accompanied that gentleman on his historic flight from London to Paris. Considered as a pilot Mr. Goodden may safely be placed in the first class.

\* \* \*

An officer in the Field Artillery writes:—"Have been out here over four months now, and have come to the conclusion that I am a peace-loving citizen. I am very keen to get an anti-aircraft gun. From what I have seen anti-aircraft guns are not a great success; the general procedure on seeing the bursts, in order to discover the 'bus aimed at, is to turn round and look in the opposite direction, and it will then generally be discovered. Our machines are doing pretty good work, and just round here certainly seem to be having things pretty well their own way. Have only seen about three German machines during the last six weeks."

\* \* \*

An artillery officer stationed on the Suez Canal writes:—

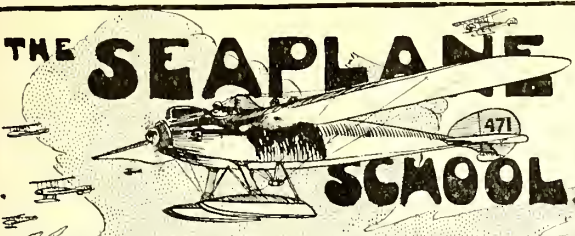
"Monday, January 25th.—I hear that 2,000 Turks are advancing on Suez, and the aeroplane was fired at by guns which the pilot thinks must be mountain guns.

"Tuesday, January 26th.—One of the Flying Corps did a very plucky thing yesterday and also had a narrow escape. On his way back he had engine trouble and had to come down. He got going again, but after five miles he had to descend again, and was spotted by some of the enemy's cavalry. He got going just in time, but was only 200 ft. up when he had to pass over them and they let fly from 300 rifles. Several shots pierced the planes and one punctured a tyre, but he got away and came down in Kantara.

"There they said they had heard of a large force of the enemy only twelve miles away, and in spite of his former troubles he set off to look for them. He found them and spotted the German officer. The observer dropped a bomb; he could not say what damage was done, but he reported that the horse on which the German officer was sitting bounded at least 5 ft. into the air and the officer went at least 15 ft."

\* \* \*

An artillery officer writes on February 3rd:—"There are many funny things happen in this strange way of conducting war. One of the funniest is to see one of our fields being



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shelled regularly day after day. It is a harmless, empty field, but it gets its physic regularly, and with all solemnity. The reason, of course, is that, with bad weather making aeroplane scouting difficult and clever concealment baffling it, the Germans do a lot of chance shooting."

### FRANCE.

The French official communiqué issued in Paris on February 11th reports:—

In the northern region there were several aviation sorties on both sides. The projectiles dropped by the enemy's aeroplanes into our lines had no effect.

\* \* \*

Reuter's Paris representative in Paris wired on February 11th:—

PARIS, February 11th.

An official note issued on Wednesday evening says:—

Near Cagny a French aviator destroyed a signal balloon. Near Verdun a German aeroplane was brought down. The pilot, Lieutenant von Hiddelen, was the aeronaut who in September last distinguished himself by throwing bombs and proclamations on Paris, the latter inviting the citizens of Paris to surrender to the German armies, marching victoriously on Paris.

[The reference is doubtless to Lieut. von Hiddessen, the young officer who won the Prince Henry Circuit in 1913, on a D.F.W. It is to be hoped that the pilot is an unwounded prisoner, as he has the reputation of being an excellent sportsman, and, like nearly all the German aviators who have visited this country, is said to be what is generally known as a "good chap."

The "Morning Post" heads the above note "Bombastic Aviator Brought Down." One fails to see any more bombast in his message to Paris than there is in our own messages to the French and Belgians behind the German lines telling them to keep up their hearts because deliverance is at hand, for at any rate the Germans were actually marching victoriously on Paris when young von Hiddessen left his card on the capital. One becomes a trifle bored by the assumed contempt for the Germans displayed by our Press. One fights better against an enemy whom one respects, and, anyhow, if the Germans are so contemptible an enemy, why are their armies where they are? Our task in defeating them is a more serious one than the general attitude of the Press leads the public to believe.—Ed.]

\* \* \*

The French official communiqué of February 13th contains the following:—

Ten aeroplanes flew over the Verdun district. The bombs they dropped did no damage.

\* \* \*

The Ministry of Marine stated on February 14th that during the previous week French seaplanes stationed at Dunkirk successfully dropped bombs on the military buildings and bodies of troops at Zeebrugge and Ostend railway station. One assumes then that both French and British machines were concerned in Thursday's affair.

\* \* \*

A semi-official note published in Paris on February 14th gives an account of a fight between a French aviator and three German pilots. The Frenchman stated that in one journey his gunner brought down all three enemy machines, two being Aviatiks and one a Taube type.

\* \* \*

The following passage in the French official communiqué of February 15th does not refer to aircraft:—

Our skiers delivered a very brilliant counter-attack on the slopes of the Langenfeldkopf.

\* \* \*

The narrative by the French official "Eye-Witness," published in Paris on February 9th, describing events from January 27th to February 6th reports:—

German aviators have dropped bombs on Hazebrouck and Bailleul. In the latter town they killed a child, but beyond this they have only caused small material damage. British aviators have thrown bombs on the German aviation camp

of Linselles. Since January 26th, in spite of the unequal temperature, our aviators have ascended every day. Even though the weather has been foggy incursions have been made into the enemy's lines. For example, on January 31st in Alsace, an aviator, soaring in a sea of clouds, took advantage of a sudden break to bombard Lutterbach station. The same day, in the Argonne, an aviator passed under the cover of clouds at a height of 700 metres only above the enemy's trenches.

The same audacious feat took place on the night of January 29th. At 11 o'clock an aviator threw bombs on the "Etat Major," whose presence at Ostend had been notified. Some days afterwards news was received that three German officers had been killed by projectiles. On February 1st a further bombardment of Ostend by night was carried out at 1,100 metres altitude. On January 30th a night reconnaissance was effected in the region of La Fère (Laon), where at the approach of the aviators the lights in all the camps were put out. One of the aviators descended to a distance of 500 metres above the German trenches and threw 18 bombs.

Bombardments which have been executed by daylight have not been less successful. On January 27th, for instance, an aviator bombarded a large number of the enemy who had congregated in a park to the north of Lille. On January 30th in Alsace four bombs were dropped on the château Hombourg which was being used as the German general headquarters. Eight bombs were dropped on the station of Nonnenbruch and six on the station at Pagny. On the following day 14 more bombs were dropped on the latter place.

On February 1st Lutterbach station was fiercely bombarded. On the next day aerial projectiles struck an important electric installation in the region of Mulhouse. On February 5th the aviation sheds at Habsheim received the attention of our aviators.

When the weather was clear and calm the aviators frequently met enemy machines, and not infrequently the Germans fled at the approach of the Frenchmen. Very often the former would make a half turn immediately he perceived his adversary, and it was thus only rarely that a combat could take place.

A fine example of an aerial fight is supplied by an exploit of one of our aviators in the region of Cernay on February 2nd. In the course of a reconnaissance the Frenchman gave chase to a German opponent and twice obliged him to make a half turn, thus preventing him from flying over the Allies' lines. The moment the German reached the safety of his own lines the Frenchman perceived another German aeroplane going towards Belfort and immediately gave chase. He soon came within range of the German and opened a lively fusillade, which was returned and kept up for a distance of 150 metres until they reached the environs of Mulhouse, where the German was compelled to descend before he was able to reach his own sheds.

In the course of reconnaissances our aviators have often experienced a fusillade from the guns of the enemy. The machines have on some occasions been pierced by shot and by the bursting of shells, but the sangfroid of the pilots has enabled them to return safely, sometimes under the most perilous conditions. On January 31st an aviator, in consequence of a mishap to his engine, was obliged to cross the enemy's lines at a height of 150 metres in the region of Hartmannsweilerkopf, which is very hilly. In spite of a fierce fire directed at him when crossing a wooded part, the aviator gained the valley of the Thur and descended safely.

To the already important losses of the Germans recently must be added the capture of one of their Aviatik machines to the north of the Meurthe, between Lunéville and Raon-l'Etape, and a machine which was struck down on February 4th near Verdun.

\* \* \*

A mutual friend in the French Army writes that Captain Oswald Watt, of the Australian Army, now serving with the French "Aviation Militaire," has received the Cross of the Legion of Honour. General Joffre himself conferred the decoration on February 11th, and the other aviators of Escadrille 30 flew overhead during the ceremony. Captain Watt is, so



far as one can gather, the first officer of the Australian Army to receive the much-to-be-desired French military decoration, and is to be sincerely congratulated on the fact, as also on the good work by which it was won. Since the escadrille went to the front he has flown consistently and untiringly at every possible opportunity, frequently at night, and in the worst kind of weather, bringing in much valuable information. His machine has been hit on many occasions, and once he was brought down between the French and German lines where he and his observing officer lay behind a haystack for over an hour under heavy shell-fire, till the stack was set alight and they had to make a bolt for it, happily escaping unhurt though the targets of every German rifle within range. One wishes him continued good fortune, and further distinctions.

\* \* \*

It is further stated that the Sergeant-Aviator Louis Noel has again been mentioned in Army Orders for consistent good flying, especially for "many flights at night." He has dropped bombs on German camps, and has done considerable damage, besides enabling the artillery to silence a battery of German heavy guns, which were very troublesome near Soissons.

\* \* \*

It was reported from Paris on February 9th that the Germans shelled Pont-à-Mousson and a German aeroplane flew over that place dropping darts.

\* \* \*

The "Times" Paris correspondent reported on February 11th that a message from Dunkirk stated that a French aviator flew over Ghent on Thursday evening and dropped bombs which set on fire a large store of petrol.

\* \* \*

It was reported from Paris on February 12th that five aeroplanes flew over Mulhausen on Wednesday, doing great damage. Bombs were dropped on the aerodrome at Habsheim, killing the watchmen, and it is believed smashing some aeroplanes. Taubes flew towards Belfort on the 11th, but the bombs thrown did little damage, and the Germans were chased away.

\* \* \*

It was definitely stated from Dunkirk on February 13th that the Allied aviators who flew over Ostend set fire to the railway station and the goods yard, which were destroyed.

\* \* \*

The examining magistrate has committed M. Deperdussin, the well-known aeroplane manufacturer, for trial at the Assizes, charged with a series of frauds involving a total sum of 28,000,000f. (£1,120,000). He is also charged with forgery. M. Deperdussin was arrested in August, 1913.

#### GERMANY.

The German Official Communiqué of February 12th, states: German airmen flew over the fortress of Verdun, dropping some hundred bombs.

\* \* \*

The German version of the Ostend raid circulated through the "Wireless Press" is as follows:—

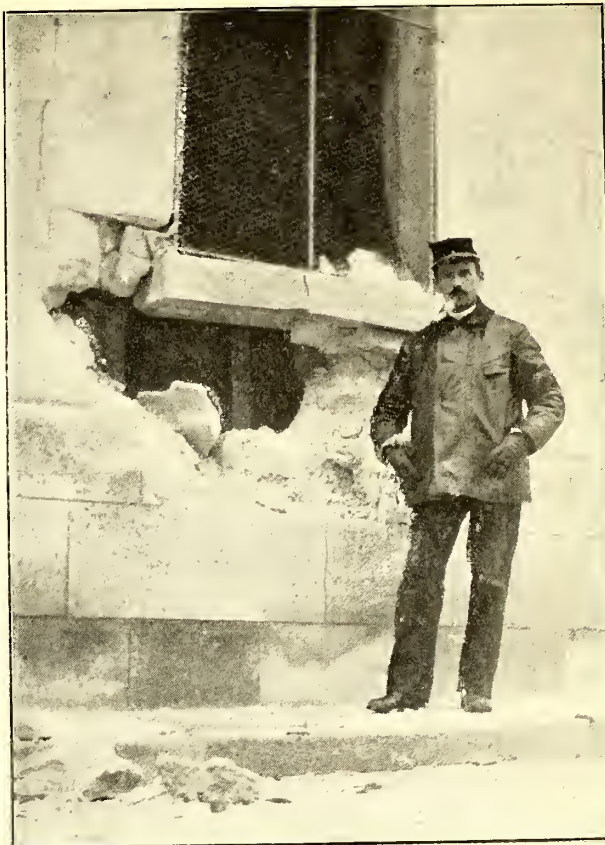
BERLIN, February 13th.

Yesterday hostile airmen again bombarded the coast, causing heavy and deplorable damage among civilians and their property. The military loss was unimportant.

Of late repeated attempts have been made by the French and English aviators to proceed as far as Brussels. The day before yesterday an English flying machine again approached the town, presumably with the intention of bombarding the German camp near Brussels. As soon as the Englishmen came into view a German Taube went up immediately, and a fierce aerial fight commenced, which ended with the victory of the German machine. The English machine suddenly crashed to the ground in a straight line, and the two occupants were killed.

\* \* \*

Mr. H. Devitte, the "Express" correspondent at Geneva, wired on February 9th:—"It is reported at Friedrichshafen that



The Sergeant-Aviator Louis Noel, photographed by a friend beside the shell-hole through which he dived to the rescue of the inhabitants of the house. (Published without his knowledge as one knows that his natural modesty would prevent his consenting.)

one of the newest Zeppelins, which has been missing for four days, fell into the North Sea off the coast of Denmark during a storm. All the crew were drowned, and the airship was destroyed. The cause of the accident is not known.

"Two Parsevals and one Zeppelin will accompany the German troops which are to take the offensive against Serbia. The Parsevals, which were deflated and placed on special trucks, passed through Munich yesterday on their way to Vienna with the German staff."

\* \* \*

The "Times" correspondent in Paris states that a Prussian casualty list received on February 9th records the names of eleven aviators recently killed.

\* \* \*

The special correspondent of the "Telegraph" at Rotterdam reported on February 11th the following story:—

"News reaches me of a very successful air raid by the Allies over Dusseldorf, resulting in the destruction by bombs and fire of a large quantity of war materials. The Germans became very nervous as to the safety of their war stores in the very important arsenal at Dusseldorf. Accordingly they erected wooden buildings a considerable distance from the arsenal and giving no outward indication in position or construction of their real purpose. To these buildings they removed secretly from the arsenal great quantities of war material, including ammunition, motor engines, tyres, and petrol. But shortly afterwards the secret was discovered.

"The sequel was a visit by aviators, who ignored the arsenal and concentrated their attention on the timber buildings."

[There is no confirmation of this report from French sources.—Ed.]



The "Daily Chronicle's" special Zeppelin impresario cabling from Geneva on St. Valentine's Day, says:—

"A thrilling aerial battle, in which a Zeppelin was pitted against three aeroplanes, was witnessed yesterday afternoon a little to the south of Mulhouse. The Zeppelin, coming from the Black Forest, was sailing towards Belfort, when it met the aeroplanes, which were flying at a much lower level. The fight lasted 40 minutes. The aeroplanes manoeuvred to reach a higher level than the Zeppelin, and they had almost succeeded, when the Zeppelin retired northward."

[Whether the story be true or not it indicates the need for fast-climbing aeroplanes.—Ed.]

\* \* \*

The Exchange Telegraph Co.'s representative at the Hague reports:—February 14th. Telegrams from the German frontier state that an aeroplane, believed to be a Belgian, flew over Cologne this morning and threw bombs over the military camp at Deutz. It avoided the German fire which was partially directed from the cathedral tower on which machine guns have been placed.

[If the above report is correct, the Germans are certainly seeking for trouble. On the other hand, it would be a great pity should this magnificent cathedral be damaged. After all, monumental works are international property, and, anyhow, Cologne may be on French or Belgian territory before long.—Ed.]

### RUSSIA.

The official communiqué of February 9th from Petrograd says:—

Our aviators dropped bombs on German trains near Rava Nowydwor and on troops in the region of Sochitz.

### BELGIUM.

According to a Paris telegram a French aviator flew over Ghent on the night of February 9th and destroyed a shed containing a great quantity of petrol.

\* \* \*

It is reported that a British aviator had an exciting duel with a German rival over Bruges on the 11th. The pair got within pistol-shot of each other, thus preventing German artillery from firing at the Englishman. However, neither did the other any damage.

\* \* \*

The "Express" correspondent on the Belgian Frontier, cabling on Sunday, 14th, says:—"I have received a message from Salzaete that the Germans are preparing a return visit for the great British air raid when weather conditions make it safe. A number of German aeroplanes were seen yesterday flying in a high wind. Others were seen also between Bruges and Eecloo.

"Immediately the aerial raid began the German authorities in the coastal area strengthened the cordon along the Dutch frontier in order that travellers might be kept under constant surveillance. The intention was to prevent any details of the damage done by the Allies' bombs from reaching the outside world. A report from Ghent yesterday by way of Watervliet says that three great fires occurred at Ostend."

\* \* \*

Mr. Percival Phillips, of the "Express," reports:—

"Belgium is being flooded with German aeroplanes—Aviatiks chiefly, judging from the reports. This type appears to have shown greater stability and mobility than its rivals in the German air fleet. An aviation school for volunteer pilots and observers has been established by the Germans near Brussels, where new machines, shipped in parts from Germany, are engined and fitted together. This branch of the service is especially popular with German youths, owing to the exceptional inducements offered for daring flights against the English and the chance of winning an Iron Cross. Experimental flights are made over the Antwerp fortifications and other German positions by the embryo airmen. 'Dummy' guns and other devices calculated to deceive the enemy are prepared for their instruction, and they also drop 'practice' bombs. Sometimes five or six of these aeroplanes circle daily above the level plain between Brussels and Antwerp."

Mrs. Knocker, who has received the Order of Leopold from the King of the Belgians for her work in tending the wounded, gives in a letter to friends in England a curious account of an aeroplane fight which she witnessed. She says, among other things:—"They seemed at that moment almost locked in mid-air, circling round and round in the most curious fashion, and yet both looking so harmless and lovely against the sunny sky. The flights were wonderful, and they were both first-class aeronauts. Suddenly the Ally seemed to make a bound upwards, or it may have been that the German descended suddenly, because all at once there was a distance of several yards between them, and the Ally did a wonderful climb higher and higher above the German, and the German came towards us. The Belgian turned and followed the German. He soon gained on the German, and then, to our surprise, he seemed to just let himself go and swept down at a marvellous angle and a terrific pace right on to the German. Evidently his object was to break a wing with his ground wheels; but, unluckily, he just missed the German, it looked to us by inches.

"The Belgian had got so much pace on that I thought for an instant that he had been hurt, as he seemed to slip through the air at that awful angle, until he nearly touched the ground, but suddenly he righted himself and planed along. The German had evidently realised his chance had come and had better shift, so he turned his propeller towards the German lines and scuttled for home."

### BULGARIA.

Mr. Alfred Stead, cabling to the "Express" on February 7th from Bukharest, says:—"Austrian activity at Orsova is growing. There is a heavy cannonade from new batteries, which are endeavouring to destroy the Servian guns. Austrian aeroplanes behind these are making systematic voyages conveying specie and plans to Bulgaria."

[It would need some thousands of aeroplanes to carry specie of any value considerable for military purpose.—Ed.]

### SERVIA.

It was reported from Nish on February 6th that an Austrian aeroplane flew the whole afternoon over the town of Pozarevac, upon which it dropped bombs. Five fell in the town and three outside, and a child was injured.

### MONTENEGRO.

It was reported from Rieka on February 14th that two Austrian aeroplanes appeared that day over the village of Rieka, where the Montenegrin Royal Family passes the winter, and flew over the Royal Palace. The King, the Queen, and the Princesses were in front of the Palace watching the machines when the aviators fired their machine-guns, and several bullets fell near the Royal Family.

[This is a Reuter story, and, if not strictly accurate, at any rate displays originality.—Ed.]

### HOLLAND.

The "Telegraaf" states that on February 13th a signal of distress was noticed from the island of Schiermonnikoog (the most eastern of the Dutch Frisian Isles). A lifeboat was sent out, and after two hours arrived on the Engelschman-plaat (a mud-bank lying between the islands of Schiermonnikoog and Ameland), and found there a seaplane and two officers who had been brought down by a snowstorm. They refused to go on board the lifeboat, saying that they preferred to pass the night on the bank. They stated that their machine was the German seaplane No. 8. The lifeboat returned, but on Sunday morning, in response to further distress signals, it went out again at 3 a.m. Later telegrams report that when the lifeboat arrived the seaplane had disappeared in the direction of Helgoland.

### ITALY.

It is announced from Italy that the sum to be applied to aviation as mentioned in last week's Notes is £660,000.

The Decree transforming military aeronautics and rendering the air battalion and the various unsatisfactory and confusing departments things of the past has now become law.

The Aeronautical Corps, with its several battalions, each looking after its own special work, will, it is hoped form a more workable whole. The Corps will be divided into two de-

partments (?), one for dirigibles, the other for aeroplanes. It will be autonomous under the command of a Director General in direct touch with the War Office. Officers will be, as before, drawn from various regiments, but will not be considered as still belonging to their regiment. When will a distinct uniform be adopted?

The new arrangement seems to be on the whole a definite advance and as well received by those interested as half a loaf by a hungry man.

A lot of changing about is going to take place among the higher ranks of the late Air Battalion all the same.

From very reliable sources—neither Rome nor Venice—I learn of the continued need of motors and fast biplanes for the Aeronautical Corps.—T. S. H.

#### CANADA.

It was reported from Toronto on February 15th that dispatches received from Ottawa on the 14th reported that two aircraft with powerful searchlights flew over Brockville, 60 miles south of Ottawa, and were heading in the direction of the capital. As a result all lights were extinguished around Parliament Buildings and Government House.

According to a report from Ogdensburg, which is across the river from Brockville, several fire balloons were sent up at about the time the airships were seen, and it seems that this is the explanation of the whole incident. St. Valentine's Day seems to explain the sending up of the balloons.

Ottawa, however, has decided to put out the lights which illuminate the clock tower of the Parliament Buildings while the House is sitting. Orders have also been given to shut off all brilliant illumination around the Parliament Buildings, the Royal Mint, and Rideau Hall, and that unnecessary lights in the Parliament Buildings shall be extinguished and the blinds drawn.

Unless some crazy German—a relative of the Polite Lunatic in the "Belle of New York"—is at work, one fails to see whence any aerial danger can reach Ottawa, seeing that the part of New York State nearest to it is all wooded wilderness, most mountainous. Still, anti-aircraft alarm may do good in Ottawa as it has done in London.

#### SOUTH AFRICA.

The "Weekly Cape Times and Farmers' Record" of January 8th reports:—

Reuter's special correspondent with Sir Duncan McKenzie's Force, telegraphing from Tschauikaib on January 4th, says: Two German aeroplanes came over from Aus early this morning, and each dropped two shells. All the shells burst, but did no damage. We had one or other of the machines in sight fully an hour. Neither, however, came within gun range.

Our guns fired several shots, but all fell short, one or two sufficiently close to make the airman hurriedly change his course. One of the aeroplanes—a biplane—flew right over our camp. Its shells fell at the edge of the camp, one only a couple of yards from occupied trenches. The occupants, however, were not at all hurt. The second machine—a Taube monoplane—arrived half an hour later. After hovering about some time, this airman dropped a couple of shells simultaneously near the already wrecked railway line, a couple of miles eastwards of our position.

Reuter's special correspondent with Sir Duncan McKenzie's Force, writing from Luderitzbucht, December 21st, says:—

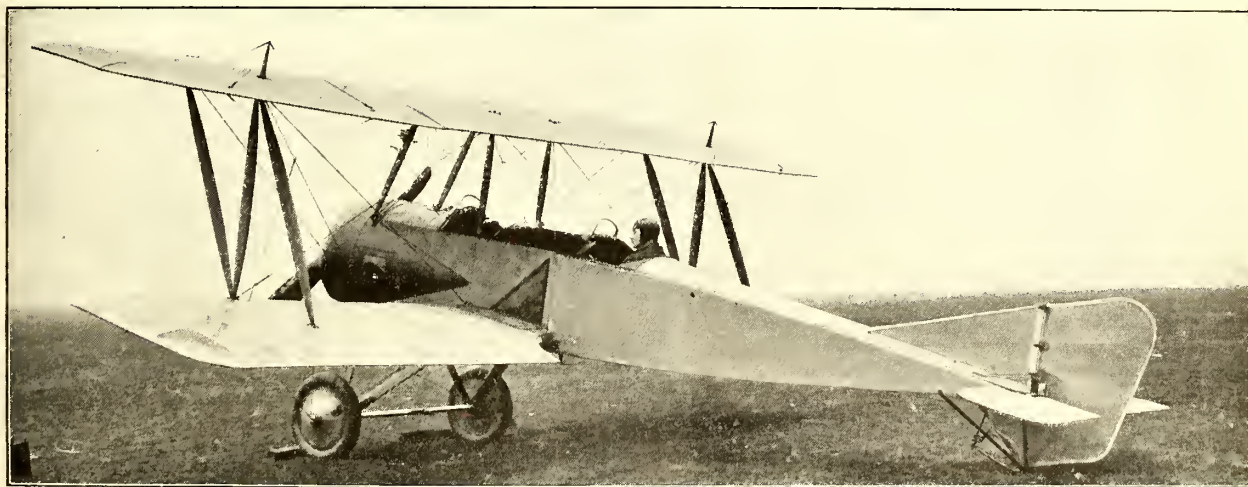
The Germans are now treating us to fairly frequent aeronautic displays. Some we like; some, frankly, we don't like. The airmen came this morning after we had surprised the enemy in his lair at Garub. Somehow we knew he would come. Reasonably, we assumed, he would at least be curious to know how we came to be able to surprise him. Two nights before we had moved silently but rapidly into Tschauikaib. We encountered no opposition. It was here where the airmen found us. The sky round about was obscured from our vision by dense mist, so, while we could hear the ethereal visitor to follow him approximately in his course, we could not see him. At any rate, we could not see him until it was much too late to train guns on him. When he was first seen, he was in the act of descending to a level from which he could the more effectively direct the launching of two 4.2 naval gun shells. It is doubtful whether at that altitude he could distinguish one object from another. Those who are charitably inclined would perhaps like to dwell on this point, as one shell burst exactly 33 yards from the operating tent of the First Field Ambulance.

He dropped a couple of shells at Rothkuppe, after having taken a quiet fly round Luderitzbucht. Only one shell burst, but three men were wounded.

On Thursday last, two shells were dropped, and both burst. The first did no damage; the second fell near a knot of men of whom it killed one and wounded nine. A certain amount of equipment was also damaged.

\* \* \*

A soldier in the "Transvaal Scottish," writing from the desert near Windhoek, says:—"The enemy's aeroplanes hovering over our camps form a diversion and much amusement. It is interesting to watch the shells bursting in the air round about them. Whatever may be doing on these occasions the order 'Scatter' is immediately given. We therefore do so, and lie prone on the ground, imagining that the airman is making a dead aim with his bomb for your particular body. A thing dropping from a height is apt to look as if it is coming straight for you wherever you may be."



The Grahame-White fast scout, built for the "Seaplane Circuit" and now fitted with a land chassis. Mr. Manton is seen in the pilot's seat.



### Questions in the House.

On Tuesday, February 9th, in reply to Sir W. BULL (Hammersmith, Opp.), Mr. McKenna said:—The Norfolk Constabulary had traced eight cars which were on the roads about the times and places of the Zeppelin's passing. The cars, whose movements had been described in letters to the "Times" and "Morning Post," had been identified, and in each case their movements, though consistent with the stories told in the papers, had been satisfactorily explained. The occupants of the cars were all persons against whom there was no possible ground of suspicion. No orders for the removal of alien enemies from the east coast had been suspended by, or at the instance of, the Home Office. No car was stopped at King's Lynn on the night of the German air raid for infringement of regulations—there was no order then in force at King's Lynn prohibiting bright headlights—but after the passing of the Zeppelin several cars were warned to extinguish their lights on account of the danger. Under the Aliens Restriction Act no alien enemies were permitted to reside in the prohibited areas except with the consent of the chief constable in consultation with the military authorities.

An HON. MEMBER.—Is the right hon. gentleman certain that the German airship referred to is a Zeppelin?

Mr. McKenna.—It is very difficult to be certain of any matter; but I am advised by responsible naval and military authorities that the airships were Zeppelins.

On February 12th, Mr. FELL (Great Yarmouth, Opp.), in the House of Commons, asked why the Zeppelin airships which traversed Norfolk recently were not fired at by the numerous forces stationed there.

Mr. Tennant.—It is obviously undesirable to make any detailed statement in answer to this question. It must not be assumed that, if fast-moving aircraft pass over places from which they cannot be effectively attacked and enjoy immunity from attack, the same good fortune will necessarily attend attacks directed against places where persons other than unprotected civilians are either present or can proceed.

[Guns, or no guns, the fact that no one saw the enemy aircraft sufficiently well to determine whether they were Zeppelins or seaplanes, makes criticism futile.—Ed.]

Lord Charles Beresford had a question to the Prime Minister to be put on February 10th, namely:—

Whether the Government will, for the future, treat German raiders from the air and sea, when captured, as pirates, and publicly hang them for the murder of women and children in undefended places, when proved guilty of that crime after trial by Court-martial, instead of treating them as honourable foes.

He received a letter from Mr. Asquith asking him to postpone the question.

[One would really have expected even Lord Charles Beresford, as a Naval officer, to have known better than put such a question. One would like to know whether, when he assisted in the bombardment of Alexandria, he sent a "parlementaire" ashore to make sure that all women and children had been removed out of range of his guns?—Ed.]

### Home Office Ineptitude.

With the approval of the Admiralty and the War Office, the Home Office have issued a public warning regarding the detection of enemy aircraft which was widely circulated in poster form. The following is the text of the warning:—

The public are advised to familiarise themselves with the appearance of British and German airships and aeroplanes, so that they may not be alarmed by British aircraft, and may take shelter if German aircraft appear. Should hostile aircraft be seen, take shelter immediately in the nearest available house, preferably in the basement, and remain there until the aircraft have left the vicinity; do not stand about in crowds and do not touch unexploded bombs.

In the event of hostile aircraft being seen in country districts, the nearest naval, military, or police authorities should, if possible, be advised immediately by telephone of the time of appearance, the direction of flight, and whether the aircraft is an airship or an aeroplane.

[The posters, which at a distance suggest an advertisement for an insecticide, possibly justify their existence because they

give the public something to think about, but the silhouettes which on close investigation are apparently intended to represent aircraft, really seem rather unnecessary, for no one not already intimately acquainted with aircraft could identify a machine in the air as the result of studying these curious black and white patches.

To those closely connected with aviation it appears that examples of really modern German aeroplanes have been entirely overlooked, some obsolete British machines are included and modern ones omitted, and the outlines of the airships are extremely misleading. For instance, the curious "shamrock" section of the "Astra Torres" is not indicated at all. The authorities certainly have an extremely difficult task before them to educate the man in the street to distinguish a biplane from a balloon, but one hopes the next shot will be more successful.—Ed.]

### The Flying Services Fund.

The subscriptions to the Flying Services Fund now amount to £6,135 5s., the amount received last week being £331 2s. This is by no means bad, considering that the Fund is really getting ready for future calls, and it is not working for an immediately pressing emergency. It is hoped that all readers of THE AEROPLANE will contribute their share, as a recognition of the highly valuable work the men of the Flying Services have done.

Subscriptions should be forwarded to the Royal Aero Club, 166, Piccadilly, London, W., or to Barclay and Co., Ltd., 1, Pall Mall East, London, S.W.

### The R.N.A.S. Comforts Fund.

The subscriptions to the above fund for the past week are lower than for some time past, and it is hoped that the workmen of the various aircraft firms engaged on Admiralty work will realise that it is because of the R.N.A.S. that they are drawing their wages, and will send contributions accordingly. No subscription of any considerable amount has been received from the "trade" for a long time.

The subscribers this week are:—Royal Aircraft Factory (War Winter Relief Fund), £3; Capt. and Mrs. McLaughlin, £1 1s.; Mann and Grimmers employees (14th contribution), 12s.; Woodworkers, Vickers Ltd. (9th contribution), 6s.; D. W. Bonham-Carter, 6s.; "Bass," 5s.; Mrs. Peretz, 2s. 6d.; A. de Moleyns, 2s. Total for week, £5 14s. 6d. Total to date, £729 13s. 6d.

There is a great demand for flannel shirts, for sweaters or cardigans, and for underclothing, and contributions of this kind are much more urgently needed than are mufflers, mittens, socks, etc., so will readers please be so good as to make an effort in this direction. If they cannot make the garments themselves, will they please send, at any rate, the price of the material to Mrs. Sueter, The Howe, Watlington, Oxon?

The following are further names of those who have contributed to the Fund:—Mrs. Stedman, Dartford; Mrs. Cail (2 cons.), Pollockshields; Miss Chambers, Finchley, N.W.; Imperial Patriots League, Westminster; Mrs. Chopping, St. Mary's, Woodbury; Mrs. Kerrison, New Southgate, N.; Master C. Sutton (3 cons.), Woodbridge; Mr. Vigers (2 cons.), Eaton Terrace.

Mrs. Parke (2 cons.), Lyme Regis; Mr. Clift, Barnes, S.W.; Miss Fisher, Truefitt's, Bond Street; Mrs. Middlemass, Hampstead, N.W.; Mrs. S. White, Westbury, nr. Bristol; Mr. Ashcroft, Acton Hill, W.; Miss Griffith, South Norwood; Mrs. Paul (3 cons.), Banbury; Mrs. Hirst, Hendon, N.W.; Mrs. Grimshaw (2 cons.), Chiswick; Mrs. Kennett, Farnborough; Mr. Fullgaines, Oxford Street, W.; Miss Snodgrass, 69, Grosvenor Street, W.; Miss Birch, Sefton, Lancs; Mrs. Yorke, Watlington; Mrs. Jacob, Thames Ditton, Surrey; T. B. 115 (Lt.-Commander Graham) (2 cons.); Mr. Pender, Highbury Park, N.; Master Dignam, Sheffield; Miss Hay, Cookham; Mr. R. A. and Mrs. Harden, St. Mary's Mansions, W.; Mrs. Painter, Wallingford; Mr. Hibbert, Hampstead, N.W.; Miss Jones, North Kensington; Miss Lewin, Eltham; Lady Maclean, Rutland Gate, S.W.; Miss Godfrey, St. John's Wood, N.W.; Mr. Geans, Chester Terrace, N.W.; Mr. R. Thompson, Sevenoaks; Mrs. and Miss Miles, Pall Mall, S.W.; Miss Jones, Cardiff; Miss Simon, Arundel Gardens, W.; Mrs. Hoare, Belsize Lane, N.W.; Mrs. Gosse, Parkstone; Mrs. Parfiter, Westminster, S.W.; Lady Maud Warrender, Gt. Cumberland Place.

(To be continued.)

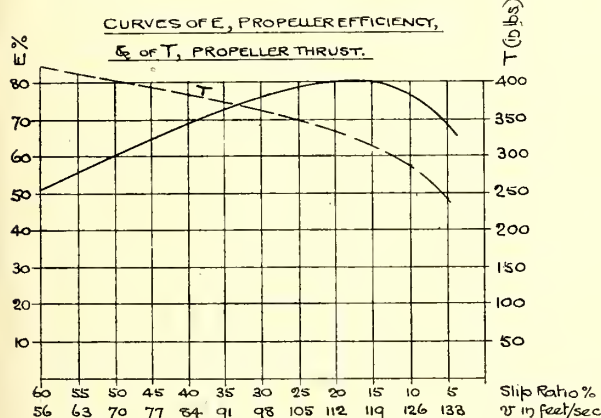
# Aeroplane Design.—(Concluded)

BY F. S. BARNWELL.

## Propeller Thrust.

We have now got our design approximately fixed up, and it remains to calculate the head resistance as accurately as possible and the propeller thrust, and we shall see then if we have sufficient power for the required high speed and climb and be able to check the balance of the machine.

Firstly for the propeller thrust. I cannot attempt to touch propeller design in this paper; it is a subject for many papers in itself. I must merely refer to experimentally determined figures for propellers. We have a good many of these and can probably pick a form that will suit us. We will take it, then, that we have the curve of efficiency for a suitable propeller on a base of slip ratio at constant revolutions (Fig. 15).



$$E = \frac{\text{Useful Work}}{\text{Total}} = \frac{T \times v}{\text{BHP} \times 550}$$

$$\text{Taking BHP} = 85 \quad \therefore T = E \times \frac{46750}{85} \text{ in lbs}$$

$$\text{Slip Ratio} = \frac{(p \times r) - v}{p \times r}$$

$$\text{Taking } p = 7 \text{ feet}$$

$$\& r = 20 \text{ per sec} \quad \therefore \text{Slip Ratio} = \frac{140 - v}{140}$$

FIG. 15.

The efficiency is expressed, of course, as—

$$\frac{\text{Useful work}}{\text{Total work}} \quad \text{or as} \quad \frac{\text{Thrust} \times \text{speed}}{\text{H.P. given to propeller}}$$

The slip ratio is  $\frac{(p \times r) - v}{p \times r}$  where  $p$  is pitch of propeller in feet,  $r$  revs. per sec., and  $v$  is speed, i.e., speed of advance along axis in feet per sec.

Knowing the horse-power our motor gives at full normal revs., we can from this efficiency curve make another curve of our actual propeller thrust in lbs. on a base of speed of advance, i.e., speed of aeroplane, in feet per sec.

## Head Resistance.

It now remains to get figures for plotting a curve of total head resistance in lbs. of machine on this same base of speed in feet per sec.

For this we must first turn to the front elevation of our aeroplane (Fig. 16) and determine which parts lie within the propeller disc and which outside it. The parts which lie in the propeller disc, i.e., in the slip-stream from the propeller, will be in a current of fairly constant speed *irrespective* of speed of machine.

We make our calculation, therefore, in the form of two tables. The first table is for parts *in* the slip-stream, the second for parts *outside* it. In neither of these tables shall we include aerofoils, as the *total* reaction on these has already been dealt with in first balancing.

The coefficients for resistance for the different parts of our machine we must obtain from figures from model experiments, and of these we have a good armament.

In both tables we find the resistance in lbs. for each item at some chosen fixed value of  $v$ ; at the same time we take, as you see, the moment of resistance of each item about the axis

TABLE 1. In Slip Stream

ITEM	A	K <sub>x</sub>	R	T <sub>u</sub>	R × h
Body	6.0	.0005	46.0	+1.2	+9.2
Chassis Struts	1.30	.0002	4.0	+2.6	+10.4
" Cross bracing	.25	.0012	4.6	+2.6	+12.0
1/2 Axle	.45	.0002	1.4	-3.9	-5.5
Tail Skid	.40	.0004	2.5	-1.3	-3.2
Rudder	.40	.0008	.5	+2.4	+1.2
1/2 Tail & Stays	2.50	.0008	3.1	+1.0	+3.1
3/4 Cf. Plane Struts	.90	.0002	2.8	+3.0	+8.4
3/4 " Bracing	.75	.0012	2.8	+3.0	+8.4
R <sub>1</sub> (TOTAL)	12.35	.000365	67.7	+0.1	-2.8

$$\begin{aligned} V &= 124 \text{ fps} \quad (130 - 5\%) \\ V^2 &= 15400 \\ R_1 &= K_x \times A \times V^2 \text{ lbs.} \\ \text{or } R_1 &= 15400 K_x \times A \end{aligned}$$

FIG. 16

TABLE 2. Outside Slip Stream.

1/4 Centre Plane Struts	.30	.0002	.6	+4.6	+2.8
1/2 " " Bracing	.05	.0012	.6	+4.6	+2.8
1/2 Tail Plane	2.40	.0008	1.9	+1.0	+1.9
Aerofoil Cables	2.70	.0012	32.0	+2.4	+76.8
" Struts	4.00	.0002	8.0	+2.5	+20.0
1/2 Axle	.45	.0002	.9	-3.9	-3.5
Wheels & Shock absorbers	1.00	.00045	4.5	-3.9	-17.6
Skids	.30	.0006	1.8	-4.0	-7.2
R <sub>2</sub> (TOTAL)	11.20	.00045	50.3	+1.51	+76.0

$$\begin{aligned} V &= 100 \text{ fps} \\ V^2 &= 10000 \end{aligned}$$

$$\begin{aligned} R_2 &= K_x \times A \times V^2 \\ \text{or} \\ R_2 &= .00503 V^2 \end{aligned}$$

At full speed i.e. 120 fps—

$$R_1 = 67.7 \text{ lbs. @ .01 ft below line of Thrust}$$

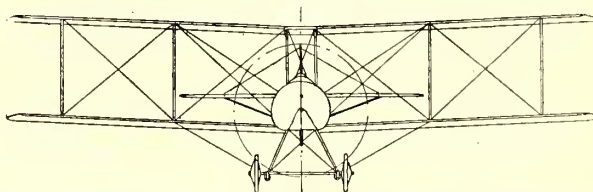
$$R_2 = .00503 \times 120^2 = 72.5 \text{ lbs. @ 1.51 ft above line of Thrust.}$$

Hence total Residual Resistance @ 120 fps

$$= 140.2 \text{ lbs. @ .77 feet above line of Thrust.}$$

When  $v = 3^\circ$ ,  $V = 88.5 \text{ fps}$

$$\text{Hence } R_2 = 39.5 \text{ lbs. \& Total Residual Resistance} = 107.2 \text{ lbs. @ .55 ft above line of Thrust.}$$



of the motor, vertically, of course, in order to obtain a figure for vertical position of centre of head resistance.

We must determine the vertical position of Centre of head resistance, less aerofoils, of course, to see if there will be a thrust—head-resistance couple. If we find that there is one—that is to say, if the line of residual resistance is above or below the line of thrust—we must either (if practicable) alter the line of thrust or, by slightly altering the fore and aft position of the aerofoils, introduce an equal and opposite lift-weight couple to counteract the thrust-head resistance one.

In the first of these tables, then, we shall take  $V$  as slightly below (say 5 per cent. below) the pitch speed of the propeller, and we shall take the total resistance  $R_1$  of the items in this table as of the amount thereby found, and as constant for all speeds of the machine.

For our case we get  $R_1$  as 67.7 lbs. acting .01 foot below line of thrust and as constant.

In the second table we shall take  $V$  as 100 f.p.s., being a convenient figure to work with, and the total resistance  $R_2$  obtained is, of course, the resistance of all parts, except aerofoils, *outside* the slip-stream at 100 f.p.s. We take  $R_2$  as *varying* as  $V^2$ .

In our case, therefore, we get a second table resistance  $R_2$  of 50.3 lbs. at 100 feet per sec.—that is to say,  $R_2 = .00503 v^2$  lbs. and acts 1.51 ft. *above* line of thrust. We see then that for the design as so far got out the line of total residual resistance is going to be considerably above the line of thrust. At maximum speed required, 120 f.p.s., it is going to be 140.2 lbs. acting .77 foot *above* the line of thrust. So we must either raise the line of thrust or shift the aerofoils aft slightly. We should, however, make the necessary correction for balance, for that speed at which  $i$  for aerofoils =  $3^\circ$ , as then the tail is floating.



Now when  $i=3^\circ$ ,  $K_y=.00055$ , hence  $v$  must be 88.5 feet per sec., thence  $R_2=39.5$  lbs., and thence total residual resistance  $R_1+R_2=107.2$  lbs. and acts at .55 ft. above line of thrust. We shall therefore decide to shift our line of thrust up .6 foot, which should give a satisfactory balance and will have the additional advantages of bringing the line of thrust nearer to the C.G. and of slightly cutting down landing gear height, and therefore weight and head resistance.

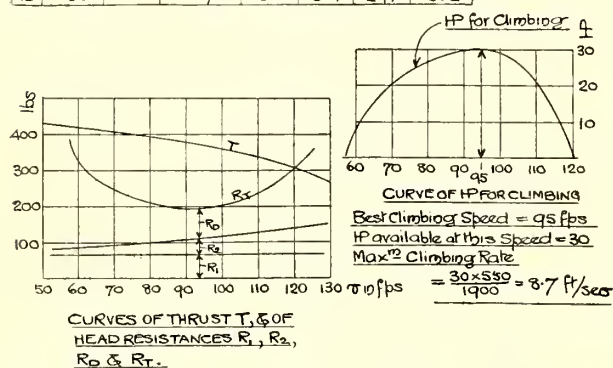
We should now correct our tables for C.G. and for residual head resistance; this would be a repetition of the previously described calculations, and the figures for amount of total residual head resistance which we have already obtained would hardly be altered, certainly not increased, by this raising of line of thrust. Hence, as we can use them as they are for looking into the remaining points, I omit, for the sake of brevity, correcting up these tables here.

Finally, then, we turn again to our model aerofoil figures to obtain the remaining part of the total head resistance, the "drift" of our aerofoils (Fig. 17). From the  $K_y$  values we

TABLE FOR RESISTANCES.

$i^\circ$	$v$ (fps)	$R_1$ (lbs)	$R_2$ (lbs)	L/D	Model	Full	$R_0$ (lbs)	$R_T$ (lbs)
			$=.000503 v^2$				$=.000 \times D$	$=R_1+R_2+R_0$
1	120	68	72	10.0	11.7	16.2	1.62	302
4	89	"	40	16.2	21.6	8.8	.88	196
7	74	"	28	12.4	13.9	13.7	.233	233
10	65	"	21.	9.6	10.4	18.2	.271	271
13	60	"	18	7.7	8.2	23.2	.318	318
16	58	"	17	6.0	6.4	29.7	.382	382

Fig. 17



first determine the speeds corresponding to several different values for  $i$ , say for  $i = 1^\circ, 4^\circ, 7^\circ, 10^\circ, 13^\circ, 16^\circ$ .

Taking into account the variation of lift to drift with log AV before quoted, we find then the drift ( $R_D$ ) of our machine's aerofoils at these different values for  $v$ .

By our previously determined equation we find the values for part  $R_2$  of residual resistance at these speeds; whilst part  $R_1$  of residual resistance is constant and already obtained. So

### A Likely Source of Supply.

The Thomas Bros. Aeroplane Co. (Incorporated) have recently moved their plant to considerably larger premises at Ithaca, New York, where not only is there considerably more room for the production of aeroplanes, but there is excellent land and water for flying schools at hand. The firm's latest production is a military tractor biplane which appears to be a very interesting machine.

The firm frankly admit that this machine is of British origin for the brothers W. T. and O. W. Thomas are mechanical engineers who received their training at South Kensington, and, in addition, the firm has recently secured the services of another British aeronautical engineer, Mr. B. D. Thomas, who was formerly with Vickers Ltd. and later with the Sopwith Company. The Thomas aeroplanes have been very successful in the past, having on various occasions beaten American records, and their types now include flying boats and tractor and pusher biplanes.

### A Change of Name.

The Cedric Lee Company, Aeronautical Constructional Engineers, The Aerodrome, Shoreham, writes:—"Gentlemen,—We beg to advise you that we have decided to alter the name of this company, and that from the present date all communications should be addressed to THE SOUTH COAST AIRCRAFT WORKS,

now we can plot out our curve of total resistance, or  $R_1+R_2+R_D$ .

If from these curves of propeller thrust and of total resistance now obtained we see that the resistance be less than the thrust at the maximum speed we are asked to accomplish, then this speed is, presumably, attained.

### Climbing Speed.

It remains to find the greatest possible climbing speed and see if the final requirement can be fulfilled.

The vertical height of the thrust curve above the total resistance curve at any point along the base gives us the surplus thrust at the corresponding base line value for speed. This surplus thrust multiplied by value for speed, and divided by 550, of course, gives us a value for horse-power available for climbing. This value we must plot as a final curve of horse-power available for climbing.

We then take the maximum value (given us by the highest point on our curve), noting the speed at which this optimum value is attained. Then our optimum value of horse-power for climbing  $\times 550$  and  $\div$  the total weight of machine gives us best climbing rate in feet per sec.

If this be decently over the requirement we can consider the preliminary design as finished.

### In Conclusion.

In the first over-all design, methods for arriving at which I have attempted to outline, no pains should be spared to get the best and most compact disposition of external parts, and the best sizes and forms for them. When one turns to the structural design, which I have not touched upon, every detail should be considered most carefully to ensure that each is as simple and compact, and, therefore, as light for its strength as possible, and that for each is chosen the best material.

If this be done, using with due common sense every source of reliable data, doing everything methodically and thoroughly, it is highly probable that the result will be a good aeroplane, and it is certain that if one goes on working thus in subsequent designs, altering up empirical constants as found necessary or advisable from increasing experience, one will design better and better machines.

It is because this system of methodical improvement is, I think, the basis of all true engineering advance, and because aeroplane design being such a young science that thrashing out of tables and formulæ has been done from the data presently available, that I have tried in this paper roughly to outline some basic methods for doing and trying so to do.

I am painfully aware that much necessary matter has perforce been left out of this paper, and that much of what I have said is more or less incorrect, but if it has proved of interest or instructive, if it help in any way the betterment of this most fascinating branch of engineering science, I shall feel amply repaid for what time and work it has cost me.

under which title we shall carry out all orders and transact all business at the same address.

"All obligations entered into by the Cedric Lee Company will be faithfully carried out on our part, and all remittances for accounts due to the company should be mailed direct to us. There will be no change whatsoever in regard to the management and control; these remain entirely as heretofore in the hands of our General Manager.—Yours faithfully, per pro. The South Coast Aircraft Works.

(Signed) W. NOYES SPENCE (General Manager)."

### The Production of Petrol.

The distributors of Shell Motor Spirit are issuing a little booklet, which is a reprint of an article published in "The Car" Illustrated, describing the processes by which petrol arrives in this country, and is thence distributed to users. Anyone interested in the use of petrol can have one of these on request by writing to the British Petroleum Co., Ltd., 22, Fenchurch Street, E.C., and it will be found not only very interesting but informative, for it gives one some notion of why petrol bought in tins is so much more expensive than petrol by the ton in large drums or in tank steamers. The illustrations showing the handling of the spirit in the firm's various depots give some idea of the magnitude of the business, which incidentally has assisted so largely in the success of the Services.



**A Notable School.**

One of the most remarkable pages in the history of British aviation during the past two years has been the success of the Beatty School of Flying. In July, 1913, Mr. George W. Beatty came to England from America, without a friend in this country, and leaving at least one enemy in the United States, who did his best to "queer his pitch" by sending damaging statements to certain aviation papers before he arrived. Mr. Beatty came to demonstrate the Gyro engine, which he did for all he was worth, and for rather more than the engine as it was at that time was worth. Also, he made many friends, and convinced those who started with a prejudice against him that he was a "white man." Then in October he returned to the States, leaving behind him nothing but good opinions.

He came back again in January, 1914, and everyone was glad to see him. In March he started his school, and since then he has a record of uninterrupted success. His Wright biplanes are well built, and are very carefully looked after, and he always gets the best service out of his engines, so that his pupils never lose an opportunity for tuition. All the teaching machines have dual control, so that the Beatty pupils are out being taught in the air when, if only single-control machines were used, they would not even be allowed rolling practice. Mr. Beatty himself does a great deal of the teaching, but he has seen to it that his instructors have been thoroughly reliable pilots. One of the first was M. Beauman, who was called up for service in the Swiss Army at the outbreak of war. M. Beauman has since returned, and has become a partner in another school, as several others of Mr. Beatty's former pupils have done. The next instructor was Mr. W. Watts, who joined the Army and is now in the Royal Flying Corps. Then came Mr. Roche-Kelly, a very able pilot, who has been accepted for a commission in the Royal Naval Air Service, and is still acting as instructor, pending his appointment. Signor Vergilio, an Italian pilot, is also instructing, and doing it very well.

The latest addition to the staff is Mr. Clifford B. Prodder, formerly a cowboy in North Dakota. Though no one would suspect the fact from his quiet and modest demeanour, one has Mr. Beatty's authority for saying that he is an expert with the lasso, and from this one infers the bowie-knife and revolver also. Though he gave no demonstrations with any of these weapons when paying a call at these offices on Monday, perhaps Hendon may be more fortunate. Anyhow, it is

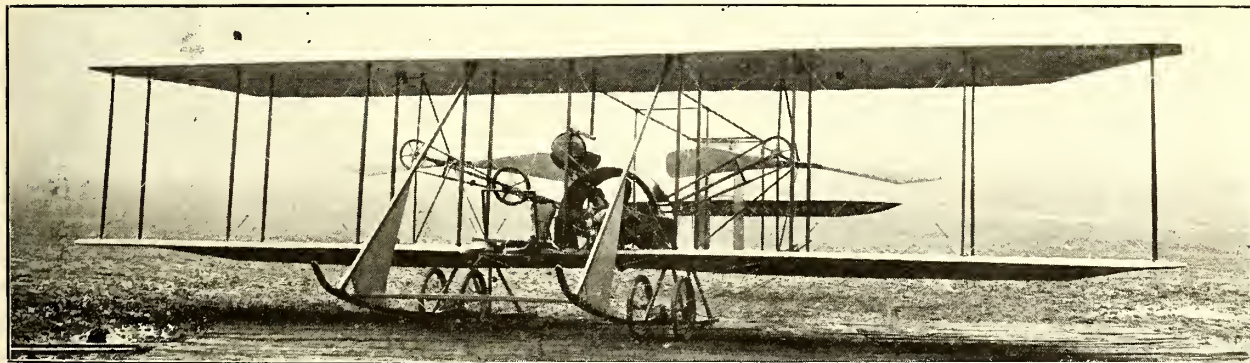
pleasing to have another American citizen over here, assisting in training more pilots for the Services. Mr. Prodder, who has been flying since 1912, was also taught by Mr. Beatty himself.

Mr. Beatty himself learned to fly in 1911, at Dayton, Ohio, his instructor being Mr. Orville Wright, and he finished his course with the late Alf. Welsh at Nassau Boulevard. Seven days after he took his certificate he went to Chicago and won 13,000 dollars in prize-money, out of a total of 80,000 dollars, and against a field of 38 competitors. Mr. Beatty took the second prize in the Duration Competition, which was rather astonishing for a novice.

Late in 1911 he started a school at St. Louis, Miss., but afterwards moved to Nassau Boulevard, and before coming to England he trained 30 pilots, besides giving exhibitions in various parts of the States, and putting Wright machines through their tests for the U.S. Army.

Both in America and in England, Mr. Beatty's pupils have had singular immunity from serious accidents, due, doubtless, to the combined patience and emphasis with which he instructs, and also to the care he takes of his machines. One only hopes such good fortune may long continue. At present there are four machines at the school, all Wright type biplanes, and three of them with standard type dual controls; these are driven by a 60-h.p. Wright engine, a 50-h.p. Gnome, and a 40-h.p. Wright respectively. It should be noted that the controls are not of the Wright type, with two separate levers, but are ordinary wheel controls, of Deperdussin type, with foot-bars for the rudder. In addition, there is a new single-seater with a 50-h.p. Gnome for the taking of certificates. The writer watched a pupil pass his tests on this machine recently, and in some six years' experience has never seen a better "ticket" taken; the pupil banked nicely at the corners, he scattered the observers at every landing, and the final glide was from nearer 500 feet than 300, with the engine absolutely stopped.

Mr. Beatty does not confine his activities to mere teaching, for he is more than a little of an engineer, and has recently turned out a four-cylinder engine for his school machines, which was designed to give 40 h.p. on the brake, and gives 46. He has an engine of more than double the size coming through, and firms who want to buy really powerful engines, so as to demonstrate their machines to the best advantage, but cannot, owing to their sources of engine supply being cornered by the Royal Aircraft Factory, may find the new Beatty engine "something to their advantage."—C. G. G.



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### An Interesting Experiment.

The Mann biplane which has just been produced was inspired by a determined effort on the part of its designer to build a machine of military importance in which stability, speed-variation, strength, and extent of view were prominent features. As will be seen by the illustrations, the machine is a twin-pusher fuselage biplane with the engine in the front of the fuselage.

The power plant is a 100-h.p. Anzani, which drives the two high-pitched propellers through a shaft and a special gear-box which gears down both propellers and reverses one of them without crossing its chain. This gear-box is made of Antox, an aluminium alloy of great strength. The main shaft has a universal coupling at either end with no intermediate bearing.

It will be seen that the front spars of the wings are sloped back, so as to improve the observer's view, but the rear spars are at right angles to the fuselage. This wing-shape will permit a machine-gun to be fired round an arc of over 180 degrees.

The testing of this novel biplane, in which provision has been made for the removal of several serious short-comings inherent in present practice, should prove most interesting, and Mr. Mann may be congratulated upon the ingenuity he has displayed in its design. The excellence of the workmanship reflects considerable credit upon Mr. Leeper, the head constructor, who will be remembered as chief mechanic to the late the Hon. C. S. Rolls, and as being with the Short Bros. at Leysdown, in the dark ages of aviation.

### School and Weather Reports.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
Hendon ...	Windy	Fair	Fair	Fair	Fair	Wet	Wet Windy
East Coast ...	Fine to Wet	Wet	Fine	Fine	Windy	½ Gale	½ Gale
South Coast ...	Rain	Partly Fine	Show'y	Fine Windy	Rain	Rain Windy	Fine Windy
Lake District	Fine Flying	Windy	Windy	Fine Flying	Fine Flying	Gale	Windy

**Hendon.**—AT THE GRAHAME-WHITE SCHOOL.—Instructors: Messrs. Manton, Russell and Winter. Pupils with instr.: Prob. Flt. Sub-Lieuts. Irving, Reed, Tollemache and Ferrand. 8's or circs.: Prob. Flt. Sub-Lieuts. Petter, Souray, Wood,

Halifax, Hilliard. Certificates taken by Prob. Flt. Sub-Lieuts. Halifax, Petter, Wood and Hilliard. Machines: Four Grahame-White biplanes.

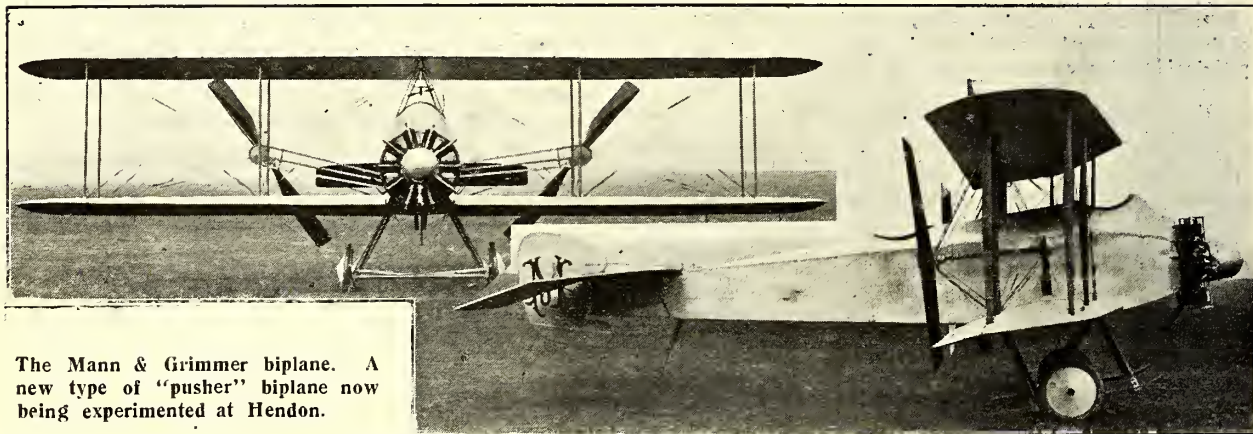
**AT THE HALL SCHOOL.**—Instructors: Messrs. J. L. Hall and J. Rose. Pupils with instructor: Messrs. McConnochie, J. Furlong, and Lieut. Moncrieff. Strts. or rolls alone: Messrs. Furlong, McConnochie, Waterson, Davy, and Lieut. Moncrieff. Machines: Hall biplanes.

**AT THE LONDON AND PROVINCIAL AVIATION CO.'S SCHOOL.**—Instructors: Messrs. W. T. Warren, M. G. Smiles. Pupils doing strts.: Messrs. England, Derwin, Lincoln, and White; half circs.: Mr. Moore. 8's or circs.: Messrs. Noakes, Bransby Williams, and Laidler. Certificate taken: Mr. Laidler took certificate on Feb. 11th in excellent style. Machines: Two L. and P. tractors.

**AT THE RUFFY-BAUMANN SCHOOL.**—Instructors: Messrs. E. Baumann, Herbert and Howard James. Pupils with instr. on 60 Caudron: Mr. Kenworthy (64 mins.), Mr. King (54), Mr. G. K. Blandy (15), Mr. Jackson (31), Mr. H. Brown (22), flying all the time at 2,500 ft. Strts. and rolls alone: Mr. Kenworthy out on 45 Anzani making good progress. Machines:—Caudron 60 and 45 h.p. tractor biplanes.

**AT THE BEATTY SCHOOL.**—Instructors: Messrs. Geo. W. Beatty and G. Virgilio. Pupils with instr.: Messrs. P. E. Cornish (15 mins.), G. Beard (62), T. F. Roche (30), B. de Meza (20), M. J. V. Miller (15), A. G. Hayward (8), G. Forbes (32), H. H. Bright (25), F. R. Laver (25), J. H. Moore (15), Vickers (7), P. C. Cooper (15), Monfea (5), Leong (10), B. B. Lewis (10), Lieut. Rimington (15) (just back from doing his "little bit" in the trenches). 8's and circs.: Mr. G. Merton (94) (taking extra practice). Machines: Beatty dual-control biplanes.

**Windermere.**—AT THE NORTHERN AIRCRAFT SEAPLANE SCHOOL.—Instructor: Mr. W. Rowland Ding. Pupils with instr.: Messrs. G. L. Raiton (45 mins.), A. Johnson (62), R. Buck (54), S. J. Sibley (46). Strts.: Mr. A. Johnson, R. Buck. 8's alone: Mr. R. O. Lashmar (70). Certificate taken by Mr. R. O. Lashmar on N.A.C. propeller biplane. Mr. Lashmar took an exceedingly good brevet, going up to 940 and handling the machine with great confidence and good judgment. Mr. Ding out for exhibition practice.



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# THE AEROPLANE

12  
WEEKLY

Edited by C. G. GREY. ("Aero-Amateur")

VOL. VIII. [REGISTERED AT THE G.P.O.  
AS A NEWSPAPER.]

WEDNESDAY, FEBRUARY 24, 1915.

No. 8

## SOME NEW PILOTS.



(Photographs from the "F.N.B. Series," by F. N. Birkett, 97, Percy Road, Shepherd's Bush, W.)  
Left to Right. Probationary Flight Sub-Lieuts.—T. F. Driscoll (Certificate 1051), E. de C. Hallifax (1075), G. W. Hilliard (1079), R. C. Petter (1074), G. E. Livock (1004), F. Besson (1045), F. T. Digby (1069), J. S. Mills (1049). (All of the Grahame-White School). Mr. M. G. Christie, 2nd Lieut. R.F.C. (954), of the Prosser School. Mr. L. F. Beynon (957), Beatty School. Mr. R. O. Lashmar (1076), Northern Aircraft School. Mr. J. C. Barfield (989), L. and P. School.



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## An Aerial Auxiliary.

Whatever one may think of the Germans, individually and as a nation, whether one regards them psychologically as the elect of the earth among whom alone of all people one can make one's "spiritual home," as Lord Haldane once appeared to believe, or whether one regards them as the direct lineal descendants of the famous Sons of Belial and the original Gadarene swine, as is the habit of the patriotic or halfpenny press Englishman, it is foolish and futile to deny that those at the head of affairs in Germany have a marvellous faculty for organisation and astonishing constructive ability. The German is not a sportsman—as old Froissart said, even in the middle ages, neither by precept nor practice could the German knights ever be taught true knightliness, and, as Mr. E. B. Osborn remarked recently, "War was never considered a kind of gentlemanly game by the Germans." But, as Mr. Osborn points out, "there is a grain of truth in the saying of a German professor, that Germany gained more than she lost by escaping some of the influences of mediæval *chevalerie*." What she learned was that an army is a machine, consisting of intricate mechanism designed for the destruction of an enemy, and not a kind of stage chorus to act as a back-ground for star-turn glory-chasers.

Most Rugby players—one may leave Association out of the question as no longer being a game that a sportsman and a gentleman can play, if, indeed, it ever was such—know the difference between a top-hole team, and a team made up of "star turns." The better men can always be beaten by the better team, on sheer combination and organisation, and that is why the German Army in the past has continually beaten armies composed of better soldiers, as in Frederick the Great's day, as at Leipsic, Lutzen, and Bautzen, in Napoleon's time, as in the Danish War of 1862, as in the Austrian War of 1864, and as in the French War of 1870. Also, it is why the German Army is where it is to-day, almost entirely on foreign soil, or under it, after more than six months of war against nations which outnumber it by at least two to one.

### Our Pro-Germans.

That reads rather as if it were written by a pro-German, but, as one finds that almost the only pro-Germans in this country are the soldiers who have fought them, one is, at any rate, in good company in admitting and admiring German thoroughness, organisation, ingenuity, mechanical ability, and practical science, all of them desirable qualities in which we as a nation are conspicuously lacking. Leaving out all question of the rights and wrongs of the war, or the moral or immoral conduct of all ranks in the respective armies, the French and British, at any rate, have the better men, but the Germans have had—up to the present—the better army, in effectiveness if not in efficiency.

Ask any officer who has seen much fighting what we have learned from the Germans about the art of war. Any Flying Corps officer will tell you that while our trenches, until quite lately, at any rate, looked like mud pies when seen from above, the German trenches are all neatly laid out like lines on a workshop blue print. The mud-piety of our trenches is not intended to help in hiding them from aerial observation, it is merely the result of our men never being trained in trench-

digging in time of peace, as the Germans have been trained for years. Ask any Artillery officer what we have learned about guns, from the biggest siege guns to the little trench-mortars, and ask him what we have learned about fire-control. Ask any Mechanical Transport officer what we have learned about moving troops in a hurry by motor-bus, and keeping them fed by motor lorry. We learned a lot during the German pursuit from Mons to the Marne. Ask any cavalryman who taught us not to use cavalry as cavalry, and who taught us the futility of cavalry charges. Any officer who thinks about war as an art and a science will admit our indebtedness to the German. Still, we always do win our wars by learning from our enemies, so the best thing we can do is learn as quickly as possible that when the German Army adopts a certain method there is a very good reason for it.

### German Observation Posts.

A thing which is constantly impressed on one by reading the officially recognised stories of the "Eye-witness with General Headquarters" is the fondness of the Germans for captive balloons, which are used for observing artillery fire. Mention of a captive balloon to anyone in this country conjures up visions of a silly spherical thing bobbing ridiculously at the end of a string at a provincial fête, or, if the person addressed happens to be a soldier, he may recall a horrid half-hour of mingled terror and sea-sickness in the remote pre-aeroplane period at Farnborough or Salisbury Plain. In any case, hardly anyone seems to have regarded the machine as an apparatus of serious military value.

But, then, who regarded the almost equally ludicrous steam-trawler as a naval weapon of offence and defence until this extraordinary war, and German ingenuity, taught us its place in the scheme of things? There is an entertaining story current in the Navy about a very much surprised Naval officer whose only excuse for a sin of commission, which must not be told till after peace breaks out, was that he "never expected a trawler to assume the offensive."

When the R.F.C. first went abroad these German captive balloons puzzled some of the young officers immensely. One idea was that they were dummy airships, or even authentic airships at anchor, deliberately placed where they were as ground-bait for aeroplanes. This notion had, anyhow, a germ of reason, for the enemy's observation balloons are generally surrounded by machine-guns and "Archibalds," so that any aeroplane which attempts to destroy one by dropping bombs on it generally meets with a very warm reception. Another belief was that they were air-mines, which could be exploded by electric contacts on the ground, so that any inquisitive aeroplane which was tempted to approach near them, or over them, could be caught in the disturbed air of a vast explosion and "hurled crashing to the ground" in the best style of the descriptive journalist.

However, it was soon discovered that they were only observation posts for artillery, and though occasionally one is brought down by a bomb from an aeroplane, or by a lucky shot from a long range gun, it appears that their casualties are few and their effectiveness considerable.



**The Dragon-Balloon.**

The type of balloon used is not the ordinary spherie, as we know it, but a long bolster-shaped thing which stands partly on end, like a sausage sitting up and begging. At the lower end is a bulge, like a smaller sausage applied to the big one. And the car depends from the envelope of the whole thing at some distance below.

Simple as the arrangement looks, it is really the outcome of a long series of experiments and much designing, for the balloon is so shaped and is so balanced by the attachment of the car, and the cable which holds it to the ground, that when it is struck by a gust, instead of being blown down and bobbing up again as the gust passes it actually gives a lift, as a kite does. Also, the shape keeps its head to wind, instead of allowing it to twiddle round like a roasting-jack as an ordinary spherical balloon does. Thus, although it swings about to some extent, it is much steadier than any other kind of balloon, and combines the qualities of a kite and a balloon. For this reason the type is technically known as the kite-balloon, though in Germany it is generally called the "drachen-balloon," presumably because the ridiculous attitude of the thing suggested to some German humorist the idea of a mendicant or penitent dragon.

These balloons are built by the Parseval firm—who kindly supplied us with our very useful Naval Airship IV—and are properly known as Parseval-Siegsfeld balloons. Many of the stories of destroyed or derelict Parsevals seen or found in Holland or Belgium really refer to these machines, for apparently some of the more intelligent inhabitants and "war correspondents" in those countries seem to have got hold of the name, and use it to distinguish these craft from Zeppelins, which name is still applied by the people of the Netherlands generally—and even by the Belgian soldiers—to any free aircraft whether Zeppelin, Parseval, Gross, Taube, Aviatik, Albatros, or anything else that floats or flies.

**Fire Control.**

Now, it seems that if the Germans, with their extensive experience of the practise and theory of war, find it worth while to make use of these drachen-balloons so largely, it is well worth our while to consider them as aerial auxiliaries, not in any way to replace aeroplanes or airships, but to "continue and supplement," and to some extent to lighten, their work. At present many a perfectly good observer, not to mention his pilot and the aeroplane, is thrown away because he has to spend hour after hour plugging solemnly round in a circle watching a certain spot in the German lines and waiting for the German guns to fire and disclose their position, so that he may signal it to his own battery, and thereafter direct its fire. Occasionally, I am told, the battery becomes bored and moves its position while the observer is still in the air, so that he goes on assiduously signalling to a friend who isn't there, and friendships of years have been broken in consequence.

All this could be saved, in many cases, by sending up a kite balloon to sit and watch the position, and it would have the advantage that the trained aeroplane observer and his pilot could be more usefully employed elsewhere, on reconnaissance or bomb-dropping, while an artillery officer who was more experienced in fire control could do as well or better in the balloon, and he would have the advantage of being in direct telephonic communication with his battery, so that it could not leave him fatuously fluttering around sending impassioned signals to a deserted hole in the ground.

Of course, there are many occasions on which aeroplanes provide the only really effective method of controlling artillery fire, so that co-operation between artillery and aircraft would naturally be increased rather than diminished in days to come, especially when an effective inherently stable aeroplane with big speed variation is produced, as seems likely before long.

**Pros and Cons.**

There are, naturally, objections to the use of captive balloons. For instance, our own experience of such things has left us with the impression that they can only be used on two or three days a week, and frequently are useless for weeks at a time, because the ordinary spheric cannot stand up to a wind of more than 15 miles an hour. That impression, however, is based on British weather, whereas those who know Central European weather realise that one gets day after day of almost calm weather a matter of 50 to 100 miles inland from the sea when it is blowing hard in the Channel and along the coast. A good example of this was during the latter part of the great aviation meeting at Reims in 1909, when for five days there was scarcely a breath of wind, while it never stopped blowing as far west as Abbeville. It is probably a knowledge of Central European weather which accounts for the Germans using these balloons so largely. It is also impossible to judge by the experiences of the past few months in Flanders, for it has been altogether an exceptional winter, with constant wind and wet instead of the usual calm frosty weather.

Actually, if the weather had been normal, captive balloons would have been very valuable, for the country is so flat that a very large field of vision would be possible without having to send the balloons to any considerable height. Presumably, the weather is responsible for the fact that little has been heard of German observation balloons in that area, and that they have chiefly been used to the east of Amiens, which seems to confirm the foregoing remarks as to the finding of calmer weather inland. The difference between Continental weather and ours was emphasised a year or two ago by General Henderson himself, when he expressed his belief—which has been absolutely fulfilled—that we should produce the best pilots in the world because we have to learn to fly in the worst weather. Moral:—Start an aviation school in Patagonia.

As we have not troubled about captive balloons up to the present we have not lost much by the bad weather, but if we start building them now we ought to be able to have a good many ready when the war really begins about the middle of May. By that time, too, the fighting line should be far enough inland for us to use them all along the line without having to bother about the area near the sea coast. A further point in this connection is that if we were a hundred miles nearer the German frontier it would be worth while to keep up a continual service of bomb-dropping aeroplanes over German towns, and every captive balloon would mean releasing another aeroplane for that duty. Even in windy weather in the summer it would be possible to use the "dragons" for at least a couple of hours about dawn, and again at sundown.

**Special Training.**

Assuming that we do not really want them till the late spring or early summer, there is plenty of time in which to train the personnel in handling them. The amount of training needed is not great, and the men need not be of military physique. Short sight, or a few missing fingers, or a limp, are no disadvantage to men whose only real work is to tail on to a rope end, and who are transported everywhere by motor lorry. If the men have good enough internal mechanism to digest Army rations and are heavy enough to be useful in holding the machines down, they may otherwise be recruited from among the maimed, the halt, and the blind, and so their addition to the Service need not interfere with recruiting for the Line. There are thousands of intelligent and decently educated youngsters who have been refused by recruiting sergeants who would be only too pleased to enlist in a captive balloon corps on ordinary infantry pay, and they could pick up their work in less than a month.

Granted that the work done by a captive balloon is less valuable than that done by an aeroplane, the captive balloon costs only a fraction as much to produce

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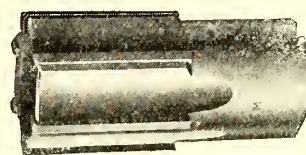
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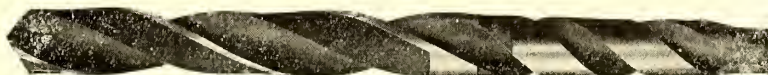
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and its crew cost very much less to train and pay, so the value received for money spent is probably about equal in either case.

#### Transport.

Presumably, the transport of personnel would be done by motor lorries. There is, one gathers, some difficulty in obtaining these vehicles, owing to the demand for them in other departments. Happily, however, there are some thousands of "gasoline trucks" to be bought in the United States, and judging from illustrated catalogues they seem to be much the same thing. Also, when once equipped, the balloon sections would not have to cover big distances, so their vehicles would stand up longer without overhaul than A.S.C. supply wagons, or other motors used for constant transport work, so much money would be saved in this way.

Properly equipped motor lorries could go almost anywhere that horsed transport could go, except in such weather as we have had lately, and even in very wet weather if the cars were equipped with non-skid chains of the kind used by American motorists they should be able to get along in almost any ground. These non-skids are much like Parsons chains, but instead of cross chains on the tread of the tyres they have cast-iron blades perhaps three inches deep projecting from the treads of the tyres like paddles, and they are guaranteed to get along somehow in the softest ground. Thus equipped, the lorries can turn off the road into the fields and send the balloon up wherever may be wished, without interference from telegraph wires, road-side trees, or any other obstruction. It is even possible to keep the gas lorry on the road and inflate the balloons beyond the obstruction, and the hauling down and letting up can be done from quite a distant point by using a block and tackle.

#### General Equipment.

Besides the motor lorries, winding winches, wire

#### Some Recent Accidents.

Various correspondents have written of late concerning the accidents which have occurred recently to pupils or young pilots on Maurice Farman's, and therefore it may be well to say something about the causes of such accidents. The Maurice Farman makes no pretence to being inherently stable, but it is a wonderfully controllable machine and is probably the easiest machine to fly in the world, being very lightly loaded, and therefore sure in answering its controls, which are adequately large and well placed. It therefore appears as if in most of these accidents the pilots had over-estimated the gliding angle of the machine and had attempted to glide too flat, a common error of inexperience.

The result of such an error in any aeroplane is that the machine stalls, and either rolls over sideways, in which case the usual nose-dive follows, or else simply gets straight onto a nose-dive without rolling over. In either case, if there is room below the machine, it is always possible to get the nose up in due course, though possibly if the machine assumes an absolutely vertical position it may be impossible, as was explained some months ago. Still, if the controls are pulled back before an absolutely vertical position is reached, there seems every reason why the machine should come back again, especially in the case with the type of Maurice Farman with the front elevator. The "shorthorn" type, which has no front elevator, is said to be somewhat slower in answering its controls, but nevertheless it does answer them.

Possibly some of these accidents may be due to the fact that, if the engine is stopped, or very much throttled down, the machine will naturally be slower in answering, owing to the absence of the slip-stream on the rear elevator.

All this applies, of course, to all types of machines, so that pilots who are flying large machines of any type, which are naturally slower in their movements than small, short machines, should be particularly careful when descending with the engine throttled or stopped not to flatten out their glide till fairly close to the ground; but, on the other hand, they must be equally careful not to leave it too late. That is to say, if a machine is stalled at a height of 100 or 150 feet, a

cables, and almost anything else needed can be arranged so as to use machinery already in stock in America or Canada, so there need be no interference with the deliveries of war material which is now on order in this country. Material for the balloons themselves can also be bought in America, though it can probably be had in this country if one goes the right way to work about it, and does not throw out acres of fabric because some samples show a weight of a few "dwts." per square yard more than others.

There are several firms in the country capable of making the balloons, notably Short Bros., Spencer Bros., and the airship section of the Aircraft Manufacturing Co., Ltd., which was established some time before the war, and is in charge of Mr. E. T. Willows. It might even be advisable to set up a Government balloon works again, though it would inevitably become known as the Royal Aerial Sausage Factory, and the Superintendent thereof would have to be made a K.C.B. at least, as recompense for moral and intellectual damage sustained through having his leg pulled.

Taking it all round, there is much to be said in favour of the dragon-balloon proposition. The machines would be really useful; they would afford useful preliminary training for aerial observers; they would make tempting targets for German gunners when every church tower in the war area has been knocked flat by the artillery of both sides, and thus they would help to disclose German gun positions, and would assist the expenditure of German ammunition; they would be good ground-bait for German aviators, as the Germans have been for ours; they could in windy weather be used as liver stimulants for middle-aged officers suffering from lack of exercise; and, finally, in all seriousness, they really are excellent observation posts. It is only regrettable that their appearance is so comic that it is hard to treat them as seriously as they deserve.—C. G. G.

fatal smash is fairly well certain, whereas if it is stalled at 30 feet or so the machine may be wrecked, but the pilot is not likely to be seriously injured. On the other hand, if he leaves his flattening-out too late, he may drive straight into the ground with fatal results.

In one case at least among the recent accidents there seems every reason to believe that the pilot fainted in the air and fell onto his control, because he was apparently descending at quite a reasonable angle, and the descent gradually became steeper and steeper till the machine struck the ground vertically, which appears to indicate some such state of affairs, though it may also possibly have been due to the pilot's feet slipping off the rudder pedals so that he pitched down from his seat onto the control handles. This, however, seems exceedingly unlikely, as he would probably be strapped into his seat in any case.

It has been suggested that in some such accidents a pilot coming down from a height of several hundred feet, and watching the ground rushing backwards under him and up towards him, may actually have become hypnotised, and so simply have forgotten to flatten out till too late. The theory certainly seems a possibility, and it would be interesting to know whether pilots have in fact experienced any such sensation and have had to bring themselves back to a realisation of their position by an effort of will.

One can quite understand also that a somewhat inexperienced pilot might keep his eyes glued onto the stretch of grass in front of him and so misjudge his distance simply through not seeing the position of the surrounding country. It is certainly quite easy to make a mistake in this way at sea, so it may be possible on land.

Some accidents, not necessarily the fatal ones, have undoubtedly been caused by instructors permitting pilots to go up alone before they have had sufficient experience to be trusted to their own control. This is one of the points on which the born instructor scores over the good pilot who is merely ordered to instruct, for any instructor who is anxious to get his pupils through quickly is always inclined to let them depend over-much on themselves.

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## Naval and Military Aeronautics.

### GREAT BRITAIN.

From the "London Gazette," February 16th, 1915.

WAR OFFICE, FEBRUARY 16TH.

REGULAR FORCES.—The undermentioned non-commissioned officer to be second lieutenant for service in the field:—

SPECIAL RESERVE OF OFFICERS.—RESERVE UNITS.—ROYAL ENGINEERS.—MOTOR CYCLIST SECTION.—Corporal C. H. Mocatta.

\* \* \*

A Supplement to the "London Gazette" of February 16th, published on February 17th, was devoted entirely to a dispatch from Sir John French, as Commander-in-Chief of the British Forces in the field, bringing to the notice of the Secretary for War the officers and men whom the Field-Marshal had found reason, up to January 14th, to recommend for gallant and distinguished service in the field.

The following names therein are of interest to those concerned with aircraft:—

#### ROYAL NAVY.

Wing Commander C. R. Samson, D.S.O.; Squadron Commander R. B. Davies; Flight Lieutenant C. H. Collett, D.S.O.; Flight Lieutenant R. E. C. Peirse.

#### GENERAL HEADQUARTERS STAFF, &c.

Colonel (temporary Brigadier-General) J. E. Capper, C.B.; Major B. D. Fisher.

#### ROYAL FLYING CORPS.

Abercromby, Lieutenant (temporary Captain) R. O., Gordon Highlanders.

Becke, Brevet Major J. H. W., Notts and Derby Regiment; Borton, Captain A. E., Royal Highlanders; Brock, Lieutenant (temporary Captain) H. le M., Royal Warwickshire Regiment.

Carden, Major A. D., Royal Engineers; Chinnery, Lieutenant (temporary Captain) E. F., Coldstream Guards (since killed in action); Cholmondeley, Captain R., Rifle Brigade; Cogan, Captain F. J. L., R.A.; Corballis, Lieutenant (temporary Captain) E. R. L., Royal Dublin Fusiliers.

Higgins, Major (temporary Lieutenant-Colonel) J. F. A., D.S.O., Royal Artillery; Hughes Hallett, Captain H. H., North Staffordshire Regiment; Humphreys, Lieutenant G. N. (S.R.).

James, Lieutenant (temporary Captain) B. T., R.E.

Lywood, Second Lieutenant O. G. W. G., Norfolk Regiment.

MacLean, Captain (temporary Major) A. C. H., Royal Scots; Malcolm, Second Lieutenant G. J., Royal Artillery; Marsh, Captain A. C. E., Royal Artillery; Martyn, Captain R. B., Wiltshire Regiment; Musgrave, Major H., Royal Engineers.

Roche, Lieutenant (temporary Captain) H. J. A., Royal Munster Fusiliers. (Since killed.)

Salmond, Major W. G. H., Royal Artillery; Shekelton, Lieutenant A., Royal Munster Fusiliers; Shephard, Captain (temporary Major) G. S., Royal Fusiliers; Small, Lieutenant F. G., Connaught Rangers; Strange, Second Lieutenant L. A., Dorset Regiment.

Todd, Captain G. E., Welsh Regiment.

Wadham, Second Lieutenant V. H. M., Hampshire Regiment.

\* \* \*

The British air raid to Cuxhaven on Christmas Day is the subject of an official statement in a "London Gazette" Supplement issued on February 18th. The statement, which is reproduced below, describes the operations, and sets forth the rewards bestowed on some of the officers who took part in them.

Admiralty Memorandum on the combined operations by H.M. ships and naval seaplanes on December 25th, 1914.

On December 25th, 1914, an air reconnaissance of the Helgoland Bight, including Cuxhaven, Helgoland, and Wilhelmshafen, was made by naval seaplanes, and the opportunity was taken at the same time of attacking with bombs points of military importance. The reconnaissance involved combined operations by light cruisers, destroyers, and seaplane-carriers, under Commodore Reginald Y. Tyrwhitt, C.B., and submarines acting under the orders of Commodore Roger Keyes, C.B., M.V.O.

The vessels detailed for the operations arrived at their rendez-

vous before daylight, and as soon as the light was sufficient the seaplanes were hoisted out and dispatched. The following Air Service officers and observers took part in the reconnaissance:—

#### PILOTS.

Flight Commander (now Squadron Commander) Douglas Austin Oliver.

Flight Commander Francis Esme Theodore Hewlett.

Flight Commander Robert Peel Ross.

Flight Commander Cecil Francis Kilner.

Flight Lieutenant (now Flight Commander) Arnold John Miley.

Flight Lieutenant Charles Humphrey Kingsman Edmonds.

Flight Sub-Lieutenant (now Flight Lieutenant) Vivian Gas-kell Blackburn.

#### OBSERVERS.

Lieutenant Erskine Childers, R.N.V.R.

C.P.O. Mechanic James W. Bell.

C.P.O. Mechanic Gilbert H. W. Budds.

The seaplane-carriers were commanded by:—

Squadron Commander Cecil J. L'Estrange Malone.

Flight Commander Edmund D. M. Robertson.

Flight Commander Frederick W. Bowhill.

At the beginning of the flight the weather was clear, but on nearing the land the seaplanes met with thick weather, and were compelled to fly low, thus becoming exposed to a heavy fire at short range from ships and shore batteries. Several machines were hit, but all remained in the air for over three hours, and succeeded in obtaining valuable information regarding the disposition of the enemy's ships and defences. Bombs were also dropped on military points. In the meanwhile German submarines, seaplanes, and Zeppelins delivered a combined attack upon the light cruisers, destroyers, and seaplane-carriers, but were driven off.

Flight Commanders Kilner and Ross and Flight Lieutenant Edmonds regained their ships. Flight Commander Oliver, Flight Lieutenant Miley, and Flight Sub-Lieutenant Blackburn became short of fuel, and were compelled to descend near Submarine E.11, which with other submarine vessels was watching inshore to assist any seaplane that might be in difficulties. Lieutenant-Commander Martin E. Nasmith, commanding E.11, although attacked by an airship, succeeded, by his coolness and resource, in rescuing the three pilots. Flight Commander Hewlett, after a flight of 3½ hours, was compelled to descend on account of engine trouble, but was rescued by a Dutch trawler, landed in Holland, and returned safely to England.

An expression of their Lordships' appreciation has been conveyed to Commodore Keyes (Commodore S.), Commodore Tyrwhitt (Commodore T.), and to Captain Sueter (Director of the Air Department), for their share in the combined operations which resulted in this successful reconnaissance.

The King has been graciously pleased to give orders for the following appointments to the Distinguished Service Order:—

To be Companions of the Distinguished Service Order:—

Captain Cecil Francis Kilner, R.M.L.I. (Flight Commander).

Lieutenant Charles Humphrey Kingsman Edmonds, R.N. (Flight Lieutenant).

The following awards have also been made:—

To receive the Distinguished Service Medal:—

Chief Petty Officer Mechanic James William Bell. No. M.489.

Chief Petty Officer Mechanic Gilbert Howard William Budds, No. 271764.

\* \* \*

The following appeared in a Supplement to the "London Gazette" issued on February 18th:—

WAR OFFICE, FEBRUARY 18TH, 1915.

His Majesty the King has been graciously pleased to approve of the undermentioned rewards for services rendered in connection with Operations in the Field. Dated February 18th, 1915:—

#### STAFF.

To be a Companion of the Distinguished Service Order:—Major B. D. Fisher.

#### ROYAL FLYING CORPS.

To be Brevet Lieutenant-Colonels.—Major (temporary Lieu-

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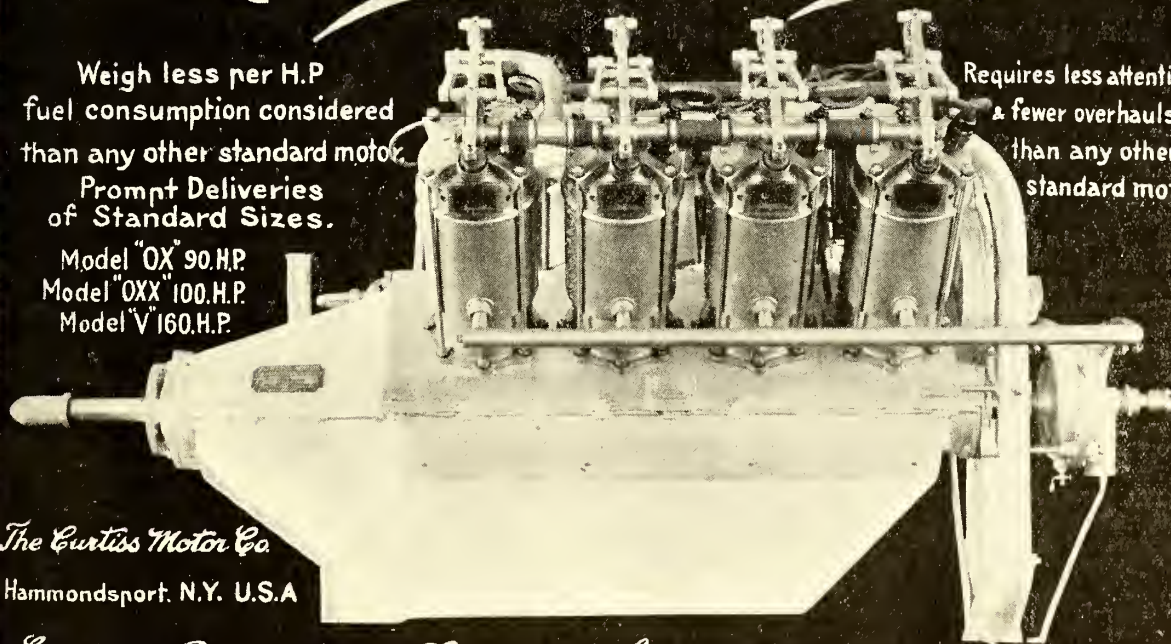
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tenant-Colonel) J. F. A. Higgins, D.S.O. (Royal Artillery); Captain and Brevet Major (temporary Lieutenant-Colonel) F. H. Sykes (15th Hussars).

To be Companions of the Distinguished Service Order.—Captain and Brevet Major (temporary Lieutenant-Colonel) C. J. Burke (Royal Irish Regiment); Captain and Brevet Major J. M. Salmond (Royal Lancaster Regiment); Captain (temporary Major) H. Musgrave (Royal Engineers); Lieutenant (temporary Captain) W. H. C. Mansfield (Shropshire Light Infantry); Lieutenant H. D. Harvey-Kelly (Royal Irish Regiment); Lieutenant G. W. Mapplebeck (the Liverpool Regiment).

Awarded the Military Cross.—Captain (temporary Major) G. S. Shephard (Royal Fusiliers).

#### ROYAL GARRISON ARTILLERY.

To be a Companion of the Order of the Bath.—Lieutenant-Colonel C. O. Smeaton (Siege Artillery).

\* \* \*

A Fourth Supplement of the "London Gazette," issued on February 18th, contains the following notice of reward for services rendered in connection with the operations in the field :—

His Majesty the King has been graciously pleased to approve of the appointment of the undermentioned officer to be a Companion of the Distinguished Service Order, in recognition of his gallantry and devotion to duty whilst serving with the Expeditionary Force :—

Captain Felton Vesey Holt, the Oxfordshire and Buckinghamshire Light Infantry and Royal Flying Corps.

For gallantry on January 22nd, 1915, in engaging single-handed a group of twelve German aeroplanes which were attacking the town of Dunkirk. He was subsequently joined by two of our own biplanes, which resulted in one of the German machines being brought down, and its pilot and observer being captured.

\* \* \*

A Fifth Supplement to the "London Gazette" of February 16th, published last night, contains the following military appointments :

#### WAR OFFICE, FEBRUARY 18TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—The undermentioned appointments are made :—

Squadron Commanders, and to be temporary Majors. Dated February 8th, 1915 : Captain B. R. W. Beor, Royal Artillery, from a flight commander, and Captain F. V. Holt, the Oxfordshire and Buckinghamshire Light Infantry, from a flight commander.

Flight Commanders, and to be temporary Captains. Dated February 8th, 1915 : Lieutenant C. G. S. Gould, Royal Artillery, from a flying officer; Lieutenant G. F. Pretzman, Prince Albert's (Somerset Light Infantry), from a flying officer; Lieutenant R. J. F. Barton, the Royal Scots Fusiliers, from a flying officer; and Lieutenant W. R. Read, 1st (King's) Dragoon Guards, from a flying officer; Captain C. F. De S. Murphy, Princess Charlotte of Wales's (Royal Berkshire Regiment), from a flying officer. Dated February 8th, 1915.

SUPPLEMENTARY TO REGULAR UNITS OR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—The undermentioned second lieutenants to be lieutenants. Dated January 22nd, 1915 : Robert R. Smith-Barry and Lionel S. Metford.

Second Lieutenant Victor A. Barrington Kennett to be lieutenant. Dated January 22nd, 1915.

\* \* \*

From the "London Gazette," February 19th, 1915.

#### ADMIRALTY, FEBRUARY 18TH.

ROYAL NAVAL AIR SERVICE.—The undermentioned gentlemen have been granted temporary commissions as flight lieutenants : Bernard F. Fowler. Dated February 1st, 1915. Lionel Lidderdale Atherton. Dated February 18th, 1915.

#### WAR OFFICE, FEBRUARY 19TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—CENTRAL FLYING SCHOOL.—The undermentioned appointments are made :—

Instructor.—Lieutenant (temporary Captain) A. H. L. Soames, 3rd (King's Own) Hussars, a flight commander, Military Wing, vice Lieutenant (temporary Captain) T. O'B. Hubbard, Special Reserve. Dated February 9th, 1915.

Officer in Charge of Transport (graded as a Flight Commander).—Second Lieutenant (temporary Captain) C. H. Saunders, Special Reserve, vice Captain D. Le G. Pitcher, Indian Army. Dated January 5th, 1915.

\* \* \*

A Supplement to the "London Gazette" of February 19th, published February 20th, contains the following military appointments :—

#### WAR OFFICE, FEBRUARY 20TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—The undermentioned appointments are made :—

Flying Officers.—Second Lieutenant J. C. Joubert de la Ferte, Special Reserve. Dated October 19th, 1914. Second Lieutenant J. P. Inglefield, Special Reserve. Dated February 1st, 1915. Dated February 4th, 1915; Second Lieutenant F. W. H. Lerwill, Special Reserve; Second Lieutenant E. H. Mitchell, 4th Home Counties (Howitzer) Brigade, Royal Field Artillery, Territorial Force; Second Lieutenant O. Mansell-Moullin, Special Reserve; Second Lieutenant M. G. Christie, Special Reserve.

\* \* \*

A Second Supplement to the "London Gazette" of February 19th, published on February 22nd, contains the following military appointment :—

#### WAR OFFICE, FEBRUARY 22ND.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS (CENTRAL FLYING SCHOOL).—The undermentioned appointment is made :—

EXPERIMENTAL OFFICER (Graded for purposes of pay as a Flight Commander).—Second Lieutenant the Hon. W. F. F. Sempill (Master of Sempill), Special Reserve, a flying officer. Dated February 9th, 1915.

#### NAVAL.

The following appointments were announced at the Admiralty on February 19th :—

ROYAL NAVAL AIR SERVICE.—Mr. B. F. Fowler has been entered as flight lieutenant for temporary service, and appointed to the "President," additional, for Royal Naval Air Service, to date February 1st.

ROYAL NAVAL RESERVE.—Acting Lieutenant L. Lidderdale Atherton transferred to Royal Naval Air Service, temporary, as flight lieutenant, and appointed to the "President," for Royal Naval Air Service, to date February 18th.

\* \* \*

The Secretary of the Admiralty made the following announcement on the evening of February 16th :—

The air operations of the Naval Wing against the Bruges, Ostend-Zeebrugge District have been continued. This afternoon 40 aeroplanes and seaplanes bombarded Ostend, Middelkerke, Ghisteltes, and Zeebrugge.

Bombs were dropped on the heavy batteries situated on the east and west sides of Ostend Harbour; on the gun positions at Middelkerke; on transport wagons on the Ostend-Ghistelles road; on the Mole at Zeebrugge, to widen the breach damaged in former attacks; on the locks at Zeebrugge; on barges outside Blankenberghe; and on trawlers outside Zeebrugge.

Eight French aeroplanes assisted the naval machines by making a vigorous attack on the Ghisteltes Aerodrome, thus effectively preventing the German aircraft from cutting off our machines.

It is reported that good results were obtained. Instructions are always issued to confine the attacks to points of military importance, and every effort is made by the flying officers to avoid dropping bombs on any residential portion of the towns.

\* \* \*

On February 16th the Secretary of the Admiralty announced that the following communication had been received :—

Embassy of the United States of America,

Berlin, January 26th, 1915.

Sir,—With reference to the statement which is reported to have appeared in foreign newspapers to the effect that the

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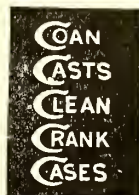
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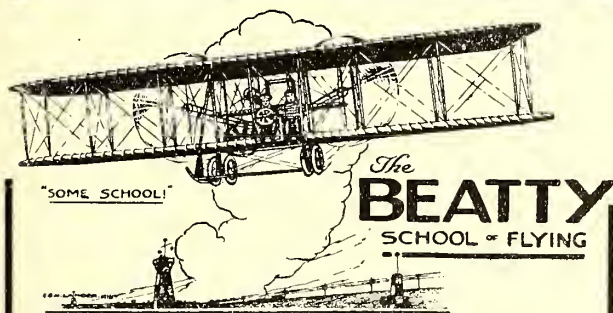
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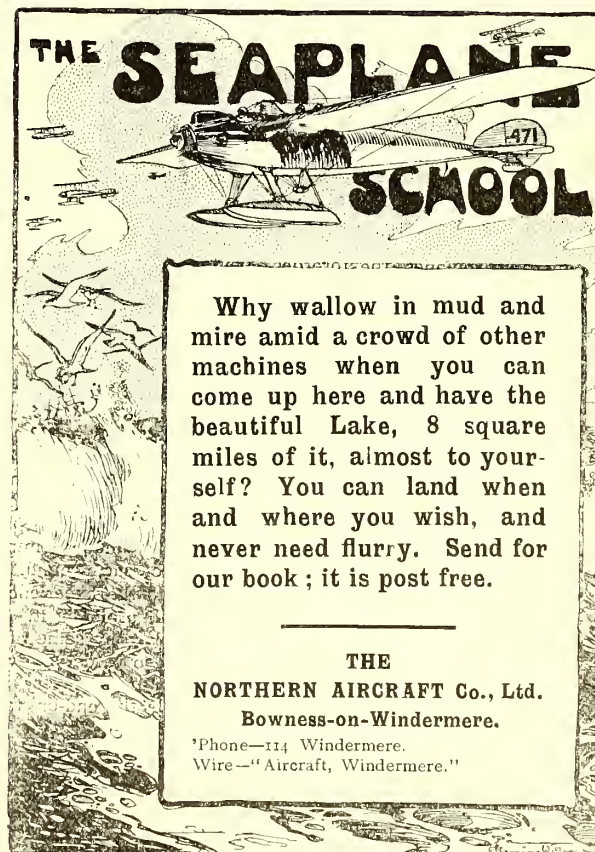
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NORTHERN AIRCRAFT Co., Ltd.  
Bowness-on-Windermere.

'Phone—114 Windermere.  
Wire—"Aircraft, Windermere."



British Flight Officer Edward Briggs, upon his landing at Friedrichshafen, was beaten by a German officer with a riding whip until he bled, I have the honour to transmit to you herewith a statement signed by Mr. Briggs which the Imperial Foreign Office requests may be brought to the attention of the British Government.—I have the honour to be, Sir, your obedient servant,

JAMES W. GERARD.

His Excellency the Hon. Walter Hines Page,  
American Ambassador, London.

Fort VIII., December 14th, 1914.

By order of the Governor of the Fortress of Ingolstadt, the Military Judge and the sworn-in military clerk, accompanied by the Ersatzreservist Alfred Frankel, who figured as interpreter, went on December 14th, at 10 o'clock, to Fort VIII., belonging to the Fortress of Ingolstadt, to interrogate the prisoner of war Edward Briggs.

To begin with the interpreter Frankel was sworn in according to instructions. Briggs appeared and declared as follows:

My name is Edward Featherstone Briggs.

I have held the rank of squadron commander in the Naval Flying Corps since the commencement of the war. Before my capture on November 21st, 1914, I was in command of the flight which left Belfort.

[Then follows the narrative of which the substance is to the effect that Squadron Commander Briggs was struck a heavy blow on the head, obviously by a German private, but that he was afterwards protected from the fury of a hostile crowd by a German officer. No officer at any time attacked him or struck him with a whip. It is his personal opinion that a German officer would consider such an act beneath his dignity, as would an English officer.]

Commander Briggs said:—

"I give this declaration without the least compulsion or pressure being imposed on me. The questions and answers have been translated into English.—Read, approved, and signed.

—(Signed) EDWARD BRIGGS."

\* \* \*

The Secretary of the Admiralty on Saturday made the following statement referring to the Royal Naval Air Service in the official announcement referring to the action with the Dardanelles Forts:—

"No ships of the Allied Fleet were hit. The action has been renewed this morning after aerial reconnaissance. His Majesty's aeroplane ship 'Ark Royal' is in attendance with a number of aeroplanes and seaplanes of the Naval Wing.

[The 'Ark Royal,' as was known before the war, is a merchant steamer specially altered for the transport and handling of aeroplanes, the fore deck being intended for launching aeroplanes. She appears in the R.N.A.S. as being commanded by Squadron-Commander Clark-Hall, R.N., who will be remembered as doing much good work in the early days of the R.N.A.S. with explosives of all sorts.—Ed.]

\* \* \*

A 'Times' correspondent points out that considerable difficulties stand in the way of a successful bombardment of the Dardanelles. He says:—

Observation can be obtained by a spotting ship giving a control station, say 60 ft. above the water line, at a range of 15,000 yards, but better still will be the result if the seaplanes with the Allies are fitted with wireless plant, and can immediately convey to the guns the exact result of each round. We must suppose that the Navy is fully alive to the experience of the Army in France in this matter and will profit by it. The range at which a bombardment can take place by some of the guns with the Allied squadrons is about 18,000 yards, and without independent observation, and the spotting of every shot, the shooting may easily be erratic. While the end-on target may be only some 50 square feet, that of the emplacement may be only some 170 square feet, and it is an operation of no small difficulty to hit such small marks at such a range.

\* \* \*

General satisfaction will be felt in the R.N.A.S. at the promotion of Captain Murray F. Sueter, C.B., to the rank of

Commodore, for the promotion will be taken as a compliment to the whole Air Service, as well as a thoroughly deserved recognition of the work Captain Sueter has done in building up that Service in the face of great initial difficulties. Before the days of flying he had already had a distinguished career in the Submarine Service, and later was engaged in airship experiments.

In organising the Air Service he has laboured indefatigably to create an effective fighting force, despite the fact that the weapons with which that force had to be equipped were of a purely experimental nature, and he has succeeded in a marked degree, as has been shown by the work the R.N.A.S. has done on sea and land. The R.N.A.S. is at present a very small force compared with what it must become during the next few years, and one hopes that as it grows the officer who has nursed it through its difficult early days will reap further rewards.

\* \* \*

A midshipman now serving in a light cruiser on the West African Coast, writing home, says:—'We got a seaplane, and went up to the Rufiji River to try to destroy the 'Königsberg,' the German cruiser, which destroyed the 'Pegasus' at Zanzibar, with bombs. The captain asked for volunteers to go up, and find out in what part of the river the 'Königsberg' was. I volunteered, and was lucky enough to be one chosen. We made several very successful flights, but, curiously enough, each time we took bombs the seaplane contracted engine trouble.

"One day the machine would not fly, and the aviator tried to fly alone. A good job for me, or I should now be a prisoner. The seaplane got away, and flew splendidly. When about 3,000 ft. up, and just over the mouth of the river (11 miles away), the aeroplane came down with a rush. The captain sent me to look for the aeroplane in a motor-boat, with two men. I left the ship immediately the aeroplane came down, just about 1 p.m., and made for the shore.

"I skirted the shore about a quarter of a mile off, and entered the mouth of the river, not daring to go up on account of the risk of being taken prisoner. Altered my course, and with the aid of glasses saw the seaplane on the shore. I headed motor-boat inshore. We got within five yards of German territory and seaplane, turned boat round, and rushed ashore. Made seaplane fast—it was high and dry on the beach—and began to tow her off. The aviator was missing.

"We had just got plane in the water when a party of Germans opened fire at us at about fifty yards' range. We answered the fire. Only having two rifles and three men in the motor-boat, we were very much handicapped. About 100 yards away from the Germans we ran on a sandbank, and all had to get out of the motor-boat and push her off. We succeeded after ten minutes' struggle, the Germans firing at us all the time. Eventually we got out of range, and back to the ship about 8 o'clock in the evening, absolutely parched with thirst and very hungry. Marvellously, only one of us was wounded, though the seaplane had 300 bullet holes in her and the motor-boat about 80 holes."

[One would judge from this that Flight Sub-Lieut. Cutler is a prisoner. If the young gentleman's story is accurate it appears that some one should be carpeted for sending a boat inshore without a machine-gun and several rifles.—Ed.]

\* \* \*

A series of successful flights was made by a British biplane over Glasgow district on February 22nd. The Admiralty had notified the public recently that such flights would take place. Presumably Beardmore's, Ltd., were responsible for the performance.

\* \* \*

Mr. F. Bernard Fowler, whose appointment to Flight Lieutenant is gazetted, will be remembered as the founder of the Eastbourne Aviation Co., Ltd. He has proved himself to be one of the most effective instructors in this country, as well as a first-class constructor and pilot. He has already turned out several of the best pilots in the R.N.A.S., and his services should prove of high value to the Navy.



## MILITARY.

The following passage in Field-Marshal Sir John French's dispatch dated February 2nd, published on February 16th, and covering the operations from November 23rd to February 1st, deals with the whole of the work of the Royal Flying Corps during that period:—

(8) During the period under report the Royal Flying Corps has again performed splendid service. Although the weather was almost uniformly bad and the machines suffered from constant exposure, there have been only thirteen days on which no actual reconnaissance has been effected. Approximately, one hundred thousand miles have been flown.

In addition to the daily and constant work of reconnaissance and co-operation with the artillery, a number of aerial combats have been fought, raids carried out, detrainments harassed, parks and petrol depots bombed, &c. Various successful bomb-dropping raids have been carried out, usually against the enemy's aircraft material.

The principle of attacking hostile aircraft whenever and wherever seen (unless highly important information is being delivered) has been adhered to, and has resulted in the moral fact that enemy machines invariably beat immediate retreat when chased. Five German aeroplanes are known to have been brought to the ground, and it would appear probable that others, though they have managed to reach their own lines, have done so in a considerably damaged condition.

\* \* \*

The descriptive account dated February 16th and published on February 19th which has been communicated by an Eye-Witness present with General Headquarters, continuing and supplementing the narrative published on the 14th inst., contains an amusing extract from a letter dated January 25th which was found on a prisoner:—

It appears that for the Kaiser's birthday there is going to be a great attack. All the aviators and all the Zeppelins will be let loose against France. On the one hand the engineers will do their utmost and on the other hand the artillery, and then a tremendous assault. Thus along the whole line the French will be "downed." You must write to us if this is true. Lie down in your trenches and do not put your head above the parapet; it will only be a target for the enemy.

\* \* \*

In the dispatch received on February 12th by the Secretary of State for War from the Field-Marshal Commanding-in-Chief, The British Army in the Field, the following passages occur relating to the operations of aircraft:—

To cause anything more than a waste of ammunition

long range artillery fire requires constant and accurate observation; but this most necessary condition is rendered impossible in the midst of continual fog and mist.

Again, armies have now grown accustomed to rely largely on aircraft reconnaissance for accurate information of the enemy; but the effective performance of this service is materially influenced by wind and weather.

\* \* \*

On February 20th, The Official Press Bureau published a dispatch from the Field-Marshal Commanding the British Forces in France, dated February 18th. The final paragraph deals with the work of the Royal Flying Corps:—

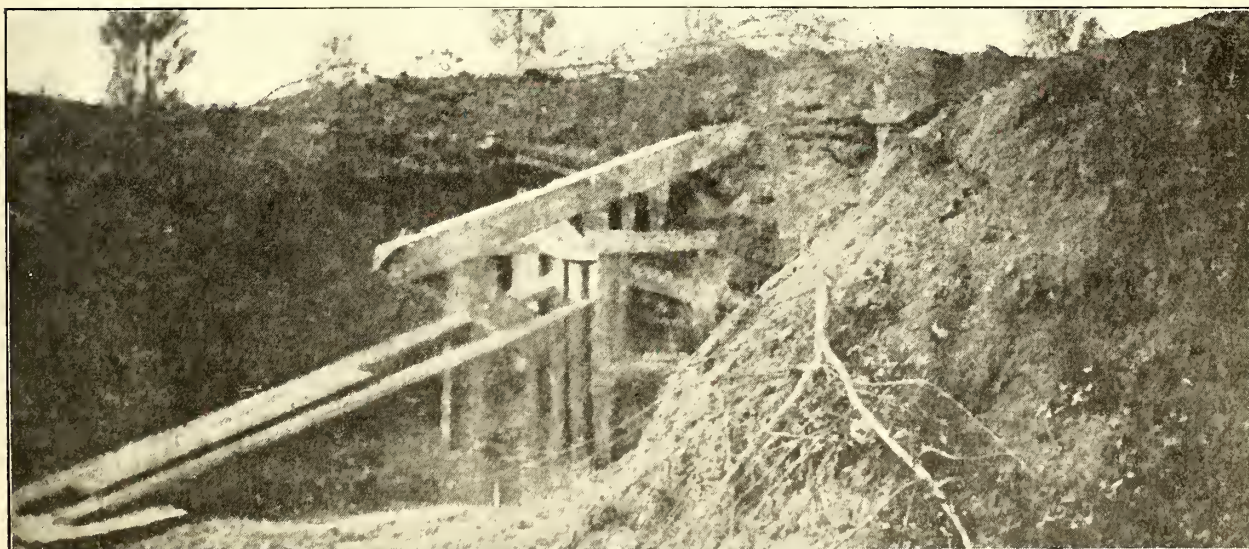
Our aircraft have carried out valuable reconnaissances and have also successfully engaged the enemy's aeroplanes. One of our aviators recently attacked two German machines in succession; he drove off the first and left the second to be dealt with by our artillery, which brought it to the ground in the hostile lines.

\* \* \*

The continuous good work done by the R.F.C. since Field-Marshal Sir John French issued his last dispatch is duly acknowledged in the "Gazette," from which quotations affecting aviation appear in this issue. The list of officers of the R.F.C. mentioned in dispatches is too long to deal with in detail, but it seems well to make some note of those officers selected for special honours.

The promotions by brevet to substantive lieutenant-colonel of temporary lieutenant-colonels Sykes and Higgins will be universally welcomed. Colonel Sykes was responsible for the organisation of the R.F.C. from its beginning, and the great amount of valuable work he then did is known to those closely in touch with the Corps. His extraordinary foresight was disclosed on the rare occasions on which he spoke at the meetings of the Aeronautical Society, for nothing of what he then foretold would have to be altered if he again spoke or wrote on the same subject in the light of six months of war. The organisation of the R.F.C., for which Colonel Sykes is largely responsible, has worked perfectly under the test of active service, and the present expansion of the Corps fits in smoothly with the original organisation, which was designed to allow for growth.

Colonel Higgins has done much work of high value at Farnborough in carrying out the scheme of organisation and in increasing the efficiency of those under his command. He was wounded after about three months of war, and has since continued his work at Farnborough, where, as a Wing Commander, he has several squadrons to raise to the same pitch of efficiency as that to which he brought No. 5 before the war.



AN ANTI-AIRCRAFT GUN.—"Anti" in that it is calculated to deceive the cleverest aeroplane observer. French pilots who have flown over it say that it is "life-like."



Colonel Burke commanded No. 2 Squadron at Montrose, and was responsible for the various journeys made by that squadron between Farnborough and Montrose, and Salisbury Plain and Montrose. That squadron was particularly notable for numerous long flights made across country by various of its officers. It has also supplied three of the newer squadron commanders, and practically all its original pilots have been mentioned in dispatches, which certainly indicates that in its original state it was highly efficient. Colonel Burke is now also a Wing-Commander.

Major Salmond, originally an instructor at the Central Flying School, took over No. 3 Squadron when Major Brook-Popham (now Lieut.-Colonel) was appointed for Staff work. Under him the Squadron has continued to do well, and a number of its pilots have been mentioned in dispatches.

Major Musgrave was on the staff of the Director-General of Military Aeronautics before the war, and for the first few months of war was largely responsible for the supply of material. He is now commanding a squadron.

Captain Mansfield, one of the new flight-commanders, was at the Central Flying School early last year, and served with No. 3 Squadron at the outbreak of war.

Lieut. Mapplebeck was a Special Reserve officer of the King's Liverpool Regiment, and learned to fly some considerable time before being appointed to the R.F.C. He did much good work with No. 4 Squadron on Salisbury Plain, and was, it is said, the first R.F.C. officer deliberately to turn an aeroplane upside down in the air. During the early part of the war he did many good flights, and was mentioned in the first of Sir John French's dispatches. Two of his feats were mentioned by the official "Eye-witness," namely, the destruction of an ammunition motor column by a bomb, and the fight in the air during the battle of the Aisne, in which he was severely wounded. He has only recently returned to duty. Early this year he was given a commission in a Regular battalion of the King's Liverpools.

Lieut. Harvey-Kelly was an officer of No. 2 Squadron, and a notably good pilot. He was one of the very few soldiers who ever flew a Cody biplane, for he was told off for instruction on that machine by the late Mr. Cody, and did a fair amount of flying on it before taking his certificate.

Major Holt was at Farnborough when first appointed to the R.F.C. At the outbreak of war he was in command of the Brooklands aerodrome, and had the taking over of the civilian schools there. Recently he distinguished himself by his single-handed attack on a dozen German aeroplanes, which resulted in his bringing one of them down.

Major Shephard was an officer of No. 4 Squadron, who had already done good service, some of it unconnected with aviation, long before the war. His appointment to command a squadron recently indicates efficiency as a flight-commander on active service, and the award of the Military Cross further indicates personal performance of an exceptional nature, though the authorities do not see fit to follow the French system of detaching such performances, details of this kind being apparently reserved for winners of the Victoria Cross, and, occasionally, of the D.S.O.

Lieut.-Col. Oswald Smeaton, who has been made a C.B., though not of the R.F.C., will be remembered by many as a pupil at the Bristol School on Salisbury Plain some two years ago, and he holds, in consequence, a pilot's certificate.

Major Fisher, who is appointed to the D.S.O., is now on the Staff. He was, at the outbreak of war, Assistant-Director of Military Aeronautics, and as such did highly valuable service.

\* \* \*

Mr. Cyril Mocatta, 2nd Lieut., R.E., will be remembered by many connected with aviation as being for some considerable time on the staff of *THE AEROPLANE*. Prior to joining this paper he was a draughtsman with the Grégoire Co., in Paris, working on the designs of that firm's aero-engine, and he left *THE AEROPLANE* to enter the motor cycle business. He joined the Army as a motor-cycle dispatch rider at the beginning of the war, and served through the retreat from Mons and until a few weeks ago, when he was sent home on sick leave. His commission was won by steady, good service over an extended period.

A regular reader of this paper, now on active service, writes: "Just a few lines to let you know what has been doing out here in the flying way. We have recently had plenty of chances of seeing both sides of the question. The chief German machines seem to be Albatros and L.V.G. biplanes, and our machines Avros and B.E.s, the former being, it is easy to see, infinitely the better machine, they rise much quicker and are the fastest of any German, British or French machine.

"The chief French machines seem to be Maurice Farman and Voisins, and I have also seen one British Blériot and some Henri Farman which I am not certain are French or British as they are always too high. But the best machines are the Avros."

\* \* \*

An A.S.C. (M.T.) officer writes:—"The way ranges are got through our aeroplanes is wonderful. The arrangements are so perfect that though our gunners hardly ever see what they are aiming at, they yet know that they are hitting every time. They are simply wonderful, and can put four shells through the same hole in a town wall from eight to nine miles away."

#### FRANCE.

The official communiqué issued in Paris on the afternoon of February 16th says:—

A French aeroplane squadron bombarded a German aviation park at Ghisteltes. An English aviation squadron bombarded Ostend.

Between the Oise and the Aisne, near Bailly, there has been very effective practice by our artillery on assemblages of motor convoys, together with the dropping of bombs from aeroplanes.

\* \* \*

The official communiqué published in Paris on the afternoon of February 17th says:—

In spite of an intense cannonade, the French and British aircraft which threw bombs yesterday in the region of Ghisteltes and Ostend were able to return unharmed to our lines. An evening communiqué says:—

Our aeroplanes have bombarded the station of Freiburg in Breisgau.

\* \* \*

An official announcement issued in Paris on February 19th gives an account of a raid on Ostend and district carried out by a French aviator:—

On February 8th, at 9.40 p.m., Lieutenant X. set off alone in an aeroplane with six bombs to carry out a night bombardment in the direction of Ostend. The weather was bad, the night was dark, and a gale was blowing from the west. After having dropped a first bomb from a height of 120 metres on to a convoy of cars, which appeared to him to be an ammunition column serving the batteries near Middelkerke, the pilot passed on to Ostend, and from a height of 250 metres dropped three bombs on the Kursaal. The violence of the explosions caused a general commotion throughout the town. Three searchlights, one of which was very powerful, searched for the aeroplane, which flew away in the direction of Furnes.

Lieutenant X. dropped his last two bombs on a dimly-lit locality west of Ostend where troops were quartered. At that moment the rays of one of the searchlights fell on the aeroplane. The pilot immediately dived down and, thanks to this manoeuvre, succeeded in eluding the light; but the machine-guns placed along the dunes fired on him without ceasing, rifle shots being added to their fire, and finally the pilot, in order to escape from the searchlights as well as from the firing, descended over the sea, coming low enough to feel the spray of the waves.

Carried by the wind, he had quickly attained the object of his flight, but the return was long and arduous. He returned to Furnes aerodrome at 10.20, having been guided by signal lights.

\* \* \*

The following passage in the account by the French Eye-Witness of the operations in France and Belgium, published on February 20th, and covering the period from February 7th to February 17th, deals with aircraft:—

Almost incessant rain, low clouds, and strong winds considerably hindered aerial operations between February 7th and February 15th. The daily collaboration of aviators and artillery has nevertheless at several points achieved results which it has been possible to confirm. Captive balloon reconnaissances have also made the regulation of the firing range possible. Reconnaissances have been attempted with success, often under the most perilous conditions.

Many instances show that the cannonade and musketry of the enemy do not stop our aviators. One of them during a reconnaissance to the east of Ypres on February 10th had no fewer than a hundred shells fired at him without turning back. Similarly, on February 11th an aviator who had been despatched with instructions to bombard an enemy position was engaged by a German aviator armed with a machine-gun on two occasions, the latter trying in vain to stop him. Our aeroplane was hit by about twenty shots, but nevertheless continued its course and dropped eight bombs on the railway station at Bollwiller, on the power station, and into the wood of Nonnenbruch. The pilot and observer subsequently regained their own aerodrome safe and sound.

By their bold raids, by their methodical work, by their fire control work in connection with the French Artillery, the French aviators have acquired an incontestable mastery and superiority.

In the subsequent developments of operations the fourth arm will certainly be called upon to play an important part.

\* \* \*

On the evening of February 22nd an official communiqué was published in Paris as follows:—

"A Zeppelin bombarded Calais this morning. It dropped ten projectiles, which killed five persons belonging to the civilian population, and did some slight damage to property." A German aeroplane is said to have escorted the Zeppelin.

\* \* \*

A report from Dunkirk on February 18th stated that a German aeroplane was brought down by artillery fire and Allied aviators. The pilot and observer were killed by the explosion of their own bombs.

\* \* \*

The "Daily Telegraph" of February 19th states that the "Central News" correspondent states that the "New York Herald" states that a large number of French aviators have been flying over various towns in Alsace, notably Bortenheim, Habstein (where bombs were dropped on an aviation park), Guebville, Colmar, Mulheim, Krazinger, and Chalombre. The airmen also flew over Homburg, and attacked the castle in which the German General Staff was quartered.

[Which might be entitled "News from Somewhere."—Ed.]

## BELGIUM.

The "Times" representative at Amsterdam in a message dated February 18th says:—"The Sluis correspondent of the 'Telegraaf' states that in last week's raid by British airmen only one bomb was thrown on Blankenberghe. It hit an electric tramcar leaving a station. The car was destroyed and eight persons were killed and 50 wounded, of whom seven died the following day."

\* \* \*

It was reported by the Amsterdam "Tyd," on February 22nd, that the second air raid over the Belgian coast had substantial results. According to this paper, 16 soldiers were killed and many wounded at Blankenberghe. At Zeebrugge a submarine was damaged and several batteries south of Zeebrugge were put out of action. Bombs were dropped on the coast batteries between Knocke and Zeebrugge, and guns were destroyed. Near Knocke seven soldiers and an officer were killed.

As a proof of the care taken by the pilots, it is stated that in Zeebrugge not a single civilian was hit or house damaged.

\* \* \*

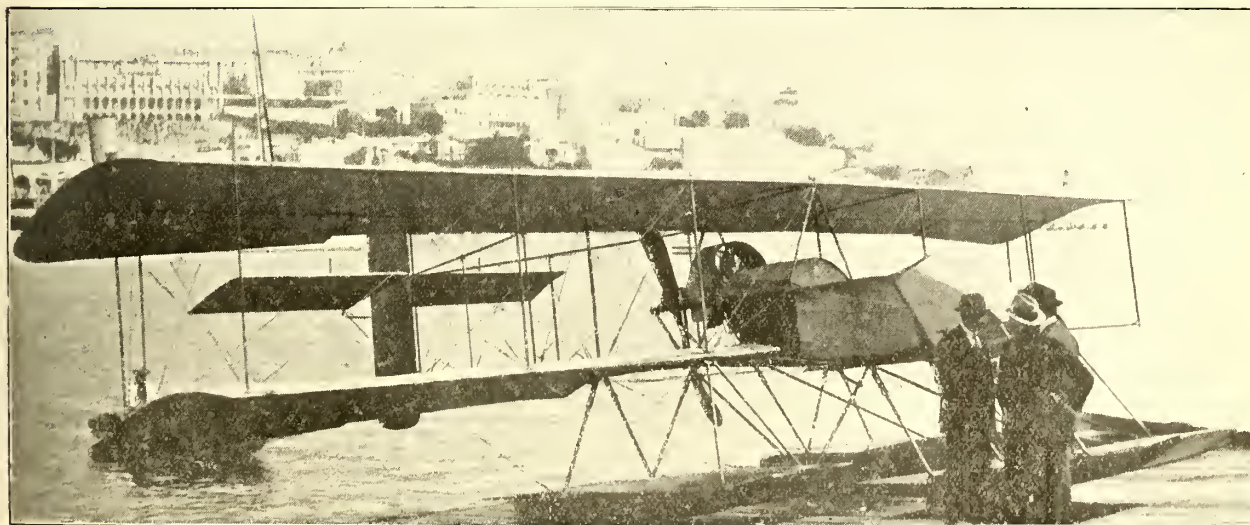
Apropos the raid on Zeebrugge, Mr. Phillips, of the "Daily Express," writing from the Belgian frontier, says that two bombs exploded on Zeebrugge breakwater, tearing up the railway and partially destroying work for mounting quickfiring. Five bombs fell in and near the inner basin at Zeebrugge. One, apparently aimed at the outer harbour, where submarines are supposed to shelter, nearly hit a party of marines repairing the railway line along the breakwater. It exploded on the breakwater itself, tearing away part of the outer protecting wall. The result of this has been the wearing away of the upper stone works at every high tide, when waves add to the difficulties of the engineers who are trying to repair it.

One of the hangars at Ghistelles Aerodrome was blown up with a quantity of explosives in it.

A number of marines and infantrymen have been sent to Bruges and other base hospitals suffering from nervous disorders. The constant strain of watching for hostile aeroplanes, which drop bombs at the most unexpected times, has been too much for the middle-aged Wurtembergers and raw members of the Marotsen brigade, who are leading a kind of troglodyte existence among the dunes.

\* \* \*

The Dutch paper, "Handelsblad," learns, with reference to the raid by thirty-four aeroplanes, that at Ostend only the sheds of the naval station were severely damaged. The buildings of the Hotel Terminus at the station sustained small damage. The bridge called De Smet de Mayer was considerably damaged, and communication with the naval station has been interrupted.



A Voisin biplane of the three-float type, as used by the French Navy.



At Blankenberghe the station and rails were completely destroyed.

At Zeebrugge the damage has been much greater. The electricity works and coke factory have been put out of action. A Zeppelin shed, with its contents, were completely destroyed.

\* \* \*

It was reported from Amsterdam that King Albert took part on February 13th in an aerial reconnaissance over the German lines. His Majesty was in a Belgian military biplane, and after reconnoitring for about an hour he landed safely. The Germans greeted the biplane with a sharp but abortive fire. If the story be true, this is the first reconnaissance, at all events in recent times, undertaken by a crowned King, and certainly the first in an aeroplane.

#### MONTENEGRO.

Sir J. Roper Parkinson, Consul-General for Montenegro, has received the following official telegram from Cetinje:—

On Friday an Austrian aeroplane passed over Cetinje, throwing four bombs in the town and one in the suburbs. Two women were killed and three children and one woman injured. King Nicholas immediately visited the unfortunate families, and rendered all possible assistance. This act of the Austrians in bombarding an open town, of which the population is entirely composed of non-combatants, has aroused the greatest indignation.

\* \* \*

An Austrian aeroplane appeared over Antivari and threw six bombs without effect.

#### GERMANY.

The "Morning Post's" correspondent at Berne wired on February 19th:—"I hear from a trustworthy source that Germany is intensely busy building aeroplanes, and that in all the aerodromes beyond the Rhine thousands of young Germans are training as pilots and mechanics. Germany's ambition undoubtedly is that her aerial fleet should greatly excel that of the Allies."

[Germany's fleet "greatly excelled" those of the Allies at the outbreak of war, and probably still excels in numbers and engine-power. The weak point seems to be the quality of the pilots rather than the quantity.—Ed.]

\* \* \*

A message received from Germany by the Marconi Co. on February 19th says:—

On February 17th Airship L4 was lost in the same heavy southerly storm which destroyed the Airship L3. Airship L4 descended near Blaavandehuk, in Denmark, on account of motor trouble, and later on drifted out to sea. Eleven of the crew have been saved, including the commander. Four are missing. The rescued men have for the time being been interned in Varde.

#### HUNGARY.

Writing of the siege of Przemyśl, a Hungarian newspaper correspondent says:—

Communication with the outside world is kept up by aviators, and almost every day an aeroplane goes to the Galician Headquarters. On its outward flight it carries only letters and post-cards, but on return it brings tinned meat and hand grenades for the troops (for the many sorties brought about a scarcity of this material), and other small and useful things.

In an interview an aviator employed on this duty said that Russian aeroplanes very often appear over the town and fortress. Quite recently they dropped bombs on the ammunition magazines, having apparently discovered their whereabouts. The bombs did not hit their mark, and next day the stores were removed elsewhere. Whenever they fly over the town the Russians always drop, besides bombs, proclamations printed in Polish and Hungarian, in which they call upon the soldiers not to believe Austrian victories, as the Russians have crossed the Carpathians and invaded Hungary.

Speaking of himself, the aviator said that he has to change his route every day when flying in and out of the fortress, for the surrounding Russians are always in wait for him, and fire at him whenever he appears. Already two of his predecessors had been brought down. One of them died and the other was taken prisoner, some important papers and documents he carried falling into the hands of the Russians. In fair weather

or foul this aviator had to fly 75 miles daily, and in order to reach a safe altitude he had to circle the city five or six times before finally heading for the west.

"I have to be very careful," the aviator said, "not to fall into the hands of the enemy, for we have only two more aeroplanes in the fortress, and they are not as fit and swift as this one is, and should we lose them and mine also no communication can be established between the garrison and the Headquarters. I can carry something like four cwt. in my machine, but the other two would not take more than half that weight. [This is a somewhat extraordinary statement, for surely if he can fly out, new aeroplanes can fly in, and there should be no lack of machines in the Austrian Army as yet, seeing that they have the German factories to draw upon, though if the figure of 4 cwt. (say 450 lbs.) as his usual load is correct, he must have an exceptionally good machine.—Ed.]

"Every day I bring out two sacks of letters and cards. It has been arranged that five men can write on one card, giving five different addresses on the outside of the card. The recipient posts it to the next address until it has reached all concerned. The officers are allowed to write one letter a week, but only on one sheet of notepaper, so as to make the letter as light as possible."

#### HOLLAND.

It was reported by Reuter from Amsterdam on February 17th, that an airship about 300 ft. long, possibly a "Parseval," flew over the east of Amsterdam that morning at about 650 ft. The crew were trying to keep the ship horizontal, but succeeded only for a few minutes, when the ship again sat up vertically and drifted towards the Zuyder Zee.

A rope some 130 ft. long was hanging from the car. Further on the line became entangled with telegraph wires, but the ship, with a bundle of wires on the rope, disappeared in the direction of Schellingwoude. "The airship had apparently been hit by shots."

From Hoorn the "Telegraaf" learns that a Parseval passed there at 9.45 a.m., apparently without a car. It flew over the Zuyder Zee in the direction of Medemblik.

[It is possible that the vessel was one of the German training squadron in Belgium, and had broken away from the control of an inexperienced crew, or it may have been only a Parseval-Siegsfeld kite-balloon, which sits habitually in a tilted position.—Ed.]

\* \* \*

Referring to the Berlin telegram confirming the destruction of the airships L.3 and L.4, the "Nieuws van den Dag" of Amsterdam, dated February 20th, says that the German Navy must now have lost all its dirigibles. L.1, L.2, and L.3 were of the Zeppelin, and L.4 of the Schütte-Lanz type. L.1 was destroyed in the North Sea in 1913, and L.2 was burned at Johannisthal. At the beginning of the war Germany, as far as is known, had fifteen dirigibles.

[Actually L.1 and L.2 were replaced by the "Hansa" and "Sachsen," and several new Zeppelins have been delivered since, nearly all to the Navy, so the original number of 10 or 12 Zeppelins and five or six others remains constant.—Ed.]

\* \* \*

It was reported from Amsterdam on February 22nd in the "Nieuws van den Dag" that a Zeppelin passed over Schiermonnikoog at noon on the 21st in an easterly direction. At 6 p.m. a loud detonation was heard from a north-westerly direction.

#### DENMARK.

It was reported by Reuter from Copenhagen on February 17th that two Zeppelins passed westward of Fanø Island going northward, that morning. The first returned at 1 p.m., and the other passed at 5 p.m. At 6.45 the latter came down on the beach at Fanø on fire. "The remains of the burned airship were guarded by soldiers at Nordby."

The "Morning Post" correspondent reports that the Zeppelin was wrecked by an explosion. The two officers and twelve men composing the crew were arrested by the Danish authorities and interned, and the wrecked airship was confiscated. From later accounts it appears that the ship was the L III, or L Z 24 in the Zeppelin shop series, which ap-



peared in May last, and from the fact that all the crew escaped it is evident that the airship was not burnt wholesale. Probably an explosion in a nacelle or a serious engine breakage forced a landing. Still later accounts state that the ship was forced to the ground by a snowstorm.

\* \* \*

A later message from Denmark says that another Zeppelin, the L. 4, was wrecked on the following day off the west coast of Jutland. Eleven of the crew were saved and four drowned. The "Times" makes the comment that the number of men mentioned requires explanation, "as the usual complement of a Zeppelin is about 28." As a matter of fact, although a Zeppelin can carry 28 or 30 passengers, 15 men would make quite a useful war crew.

It is possible, and indeed probable, that the L. 4 was a Schütte-Lanz, and not a Zeppelin at all.

\* \*

The correspondent of the "Times" at Copenhagen, cabling on February 18th to report the loss of L. Z. 3 on the previous day, says:—"The airship left Hamburg at 4 o'clock in the morning and cruised during the day off the north-west coast of Denmark. Her motors failed one after another, and about 6 o'clock in the evening the ship landed with a crash on the beach of Fanø Island, snapping in two. The crew, consisting of two officers and 14 petty officers and men, jumped out and escaped uninjured. Immediately afterwards the ship burst into flames. The captain declares that he set fire purposely to the ship, 'in order to prevent her being blown farther ashore and imperilling lives and adjacent buildings.' In any case, the ship is utterly destroyed. The crew had just time to land their ammunition and bombs. They were interned for the night in a local hotel."

\* \* \*

Reuter's correspondent at Amsterdam was moved to report the following story on February 17th:—"The captain of the Dutch steamer 'Helena,' which arrived at Rotterdam to-day, reports, says the 'Handelsblad,' that 40 miles from the Haaks Lightship a Zeppelin steered towards the steamer and followed it for some time, but disappeared after an exchange of flag salutes."

\* \* \*

It was reported from Copenhagen on February 20th that a Zeppelin passed late last night over Mariager, on the east coast of Jutland, flying from the south-west to the north. The airship was fully lighted up and easily discernible.

## SOUTH-WEST AFRICA.

The following two extracts are from soldiers' letters from G.S.W.A. published in "The East Rand Express" of January 16th:—"... We had another visit from old 'Hairy' (aeroplane) to-day. The alarm was blown at about 6 o'clock and immediately everyone got hold of his rifle and ammunition and doubled out. He never came within 6,000 yards of us. Our two 15-pounders had a smack at him, but were not within a 1,000 yards of him. Taking it on the whole, it was quite an interesting morning. By Jove! I envied him up there. I think I would give anything to be an aviator."

A Boksburg member of the Wit Rifles gives an interesting account of ... and the visit of a German aeroplane. "A few days ago we had another visit from the aviator. It was about 5 o'clock in the morning when he was sighted. According to instructions, we all scattered, owing to the fear of his dropping bombs. However, he kept a good distance away and did not attempt anything like that. The artillery had two shots at him, but they both fell short. He was travelling very fast, heading for Ludenitzbucht. It was interesting to see the shells from the gun exploding in mid-air. There seemed to be quite an appreciable pause after the sound of the shot before they burst."

## CANADA.

Canada has produced an aviator after an interval of nearly six years, since J. A. D. McCurdy first flew.

"La Presse" (Montreal) of January 23rd announces that Jack Laviolette, the famous athlete, "la crosse" and hockey player, and chauffeur of racing automobiles, has the ambition to become an aviator, and every day for several weeks he has been to Coteau Rouge, near Montreal, where, under the direction of G. Pollien, he is learning to fly. Pollien is enthusiastic about Laviolette.

## U. S. A.

A well-known American aviator writes:—

"I have delayed my reply to your letter, expecting to announce therein the arrival of two volumes of THE AEROPLANE attended by the vanguard of a third, but that event has not 'come off' to date. Very likely some censor has found an agreeable job and is in no haste to part with it. Anyway, here's hoping the denizens of the deep will not have the opportunity to have such a choice meal, for while there may be no 'fish-stories' therein, they would no doubt 'swallow' the editorials with more gusto than many of their intended readers."



A FAIR MARK.—A corner of the City of Leipzig, showing where two important railway lines and a road cross one another.



"Your question— My answer—

How are things going?—Slow.

What are you doing?—Nothing.

What are you making?—Air castles (not aeroplanes).

"We had things pretty well cooked here last summer. Then the war came and upset things. Capital became afraid, money scarce, and everything but aeroplanes went up into the air. However, they are coming down again (no exceptions to the laws of gravitation), and we intend to take possession again. Though somewhat battered, we expect to get things shipshape again.

"Aviation has been having a good sleep over here. It's been dreaming most of the time and walking in its sleep. No wonder there have been so many disastrous tumbles. However, the alarm has gone off and it shows signs of awakening. We are hoping it will soon open its eyes, get on its feet, and start after the rest of the world before they get out of sight.

"Among other things, aviation here is afflicted with the attentions of numerous rag (not gum) chewing parlor aviators (mostly uncertified) who certainly missed their calling. At least, they represent the wrong sex. They have given up the idea of a 'Round the World' race, partly because most of the possible contestants seem likely to be otherwise engaged, and partly because few of the contestants could complete the course without landing in the enemy's country for supplies, which under such circumstances are not usually obtainable, as the inhabitants are so glad to get hold of you that they do their utmost to prevent your departure, and often succeed.

"However, they have got a brand-new idea (it may not last long). This is a trans-Continental race (only across North America), to be contested simultaneously over several separate routes of equal geographical length but several hundred miles apart. The numerous probable competitors might devastate the country with their backwash if all followed the same route. So far the weather bureau refuses to guarantee equally favorable or unfavorable weather conditions over the several routes. Nature, in fact, seems to be most unkind, for since there are more mountains on some routes than others, they are now discussing, 'How far is a mountain?'

"Before long the Wright Co. will realise that their patent gold brick is not worth a fabulous sum, and will for a reasonable sum allow it to be used in the building of aviation. No doubt it is entitled to a place on the corner-stone.

"The present war will undoubtedly weed out many of the poorer aeroplane designs. I notice the French soon dropped such obsolete machines as the Blériot and Nieuport, at the same time giving the Morane its proper though tardy recognition. Though I know the Blériot parasol was an absolute failure, I have often wondered if any Morane parasols were being used. While the parasol type has several faults, its facilities for observation are so excellent that one would expect it to win a place in military service unless it had some very objectionable failing. I have never been able to obtain any satisfactory information regarding this type.

"I have always felt that piloting was the weakest branch of aviation, due principally to the general isolation of pilots (in effect) and their lack of practice. This want is certainly supplied for those engaged in this war. The results will undoubtedly follow."

\* \* \*

From the "New York Times," January 25th, 1915:—

"\$5,000 TROPHY FOR AIRMEN.—A \$5,000 trophy and five purses of \$1,000 each have been offered by Glenn H. Curtiss, through the Aero Club of America, for competition between army and navy aviators. The trophy is to be competed for annually. Mr. Curtiss had a conference with Alan R. Hawley, president, and Henry A. Wise Wood, Allan A. Ryan, W. W. Miller, and Henry Woodhouse, governors of the Aero Club of America, at which the proposed trophy was discussed.

"Mr. Curtiss said that when he took part in contests he found trophies inducive to greater accomplishments. Now he wished to reciprocate. The rules for the contest are to be made and promulgated by a committee composed of members of the army, navy, and the Aero Club of America, as in the case of the Clarence H. Mackay military trophy. Messrs. Hawley, Wood, and Woodhouse expressed their belief that the competition will result in exceptional accomplishments."

## The Latest Invasion.

On Sunday night, February 21st, an enemy aircraft, probably an aeroplane, flew over Essex. It passed over Braintree at about 8.30 and dropped two bombs, neither of which did any damage. About ten minutes later it reached Colchester, about sixteen miles away, where a bomb damaged three cottages somewhat seriously, but failed to wake the slumbering infant of an N.C.O. of the R.F.A. in one of them. A bomb is said also to have been dropped at Coggeshall.

The German pilot will doubtless be somewhat annoyed with the absence of results from his 200-mile journey. His scheme of abstaining from dropping bombs until he turned eastwards to go home was eminently sensible. It seems curious that he did not venture nearer to London.

An act of "great gallantry" by two soldiers on the occasion of Sunday's air raid is reported by the press. At the meeting on February 22nd of the Braintree Urban Council, which was attended by the officers of the 5th Notts and Derbyshire Regiment, the chairman, Mr. George Hunnabell, made presentations to Corporal Large and Private Goodall.

Finding one of the bombs in a field, the two soldiers placed a stick through the handle and proceeded to carry the missile to the river. On the way the bomb burst into flame, but the men ran on with their burden and immersed it in the river.

Corporal Large received a silver cigarette case, and his comrade a silver watch.

[This is precisely the kind of "gallantry" which wastes lives, like carrying wounded men in under heavy fire, and so forth. If the finders of the bomb had taken out a bucket of water and had carried the bomb in the bucket to Headquarters, they would not have risked the lives of two of the King's soldiers unnecessarily.—Ed.]

## Efficiency v. Effectiveness.

The following letter has been received:—

"Sir,—In reference to your editorial in the current number of THE AEROPLANE, entitled 'Efficiency versus Effectiveness,' may I point out what seems to be an error?

"Under paragraph headed 'Effective Speed' the following statement appears: '... Supposing one maker produces a highly efficient machine which, with an engine of 70 h.p., is capable of doing 80 miles per hour, and another maker produces one which carries the same useful load and does 90 miles per hour, but needs 100 h.p. to do it, the latter machine is obviously the more effective, though equally obviously inefficient.'

"Tabulating the above we have two machines carrying the same useful load—(i) gives 80 m.p.h. with 70 h.p. ('highly efficient'); (ii) gives 90 m.p.h. with 100 h.p. ('obviously inefficient').

"Allowing that the resistance varies as the square of the velocity, and that hence the horse-power varies as the cube of the velocity, let us consider what will be the horse-power required for a 90-m.p.h. machine, and assuming the total weight to be the same as the 80-m.p.h. machine, which of course neglects the additional weight due to the bigger motor.

"Then  $\text{h.p.} \propto V^3$ ; our result is given by  $\text{h.p.} = \frac{90^3}{80^3} \times 70 = 99.6 \text{ h.p.}$

"There would not, therefore, appear—if my assumptions are correct—to be any difference whatever in the efficiency of the two machines you have compared; in fact, if the extra weight of the motor be considered and increased weight of aeroplane in consequence of the higher speed, the advantage is on the side of the 90-m.p.h. machine.

"(Signed) LIONEL DAWSON."

[Many thanks to Mr. Dawson. Not being a scientist, it seemed to the writer that an extra 30 h.p. was more than enough to give an extra 10 m.p.h. The argument, therefore, is all in favour of using the 100-h.p. engine. But even if 120 h.p. were necessary to get the speed up to 90 m.p.h.—the machine would be more effective. However, the point is that what is needed in war is performance and not theoretical excellence. A machine with a factor of safety of 8 to 1 all round may be a fine thing in theory, but one with a factor of safety of 4 to 1, which will climb twice as fast out of the way of German shells, would be preferred by most pilots.—Ed.]

**The R.N.A.S. Comforts Fund.**

Mrs. Sueter is receiving ample supplies of gloves, mittens, woollen cuffs and comforters for the R.N.A.S. men, but the urgent demands from the air stations for cardigans and jerseys still continue. There is also a considerable want of woollen pants and shirts, and readers who can only send one of these garments instead of a number of mufflers or mittens will be doing more needed work.

The following cash contributions have been received during the week:—Officers, R.N. Air Station, Hendon, £10 10s.; Sir W. Armstrong, Whitworth & Co. Aviation Dept. (Employees), £8 12s. 9d.; The Misses Scote, £2; R.A.F. War Distress Relief Fund (2nd contr.), £2; (3rd contr.), £1 10s.; Refunded by Army Co-operative Stores, overcharge on sundries, £1 12s.; Vickers Ltd., Erith (Aero Mechanics' 13th contr.), 10s. 6d.; Miss Warwick, 10s. 3d.; Vickers Ltd., Erith (Woodworkers' 10th contr.), 6s.; Miss Allison, 5s.; Miss James, 2s. 6d.; Anon, 2s. Total for week, £28 1s. Grand Total to date, £757 14s. 6d.

Further contributions should be sent to Mrs. Sueter, The Howe, Watlington, Oxon.

The following are further contributors in kind: Mrs. Clifford, Westcliff-on-Sea; Mrs. Green, Craven Arms; Mrs. Dugmore, Kings Lynn; Miss Ackland, Brighton; Mrs. Rose, Kidlington; Miss Sear, Worcester Park; Mrs. Garrick, Westcott, Dorking; Mrs. Trafford, Sanderstead; Mr. A. Canner, Godford; Mrs. Stewart, Lennox Gardens, S.W.; Miss Angrave (2 cons.), Bayswater, W.; Mrs. Hinde, Sevenoaks; Miss Rogerson, Strood; Miss Bowes; Miss Hantshaw, Chelsea, Mrs. Blake, Brockley, S.E.; Miss Blair, Glasgow; Sir Eric and Lady Barrington, Wimbledon Common; Miss Mulliner, Kew; Mrs. Varley (2 cons.), S. Farnborough; Miss Bury, Saltburn-by-the-Sea; Miss Bettles, Leytonstone, N.E.; Mrs. Brodrick, Kensington Court, W.; The Misses Snee, Colchester; Miss Bed, Canterbury; Mrs. Mills, Weybridge; Mrs. Bridger, Richmond; Mrs. Moon, Winchester; Mrs. Jones, Ipswich.

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Mr. Bonham-Carter, Lyndhurst; Miss Pralt, Wimpole Street, W.; Miss Curtis, Tunbridge Wells; Mrs. Davidson, Seven Kings, Essex; School Boys, Letchworth; Miss Evans, Clapton, N.E.; Mr. N. Cousins, Perth; Lady Seymour, Brighton; Mrs. Iliff, Folkestone; Miss Moore, St. Albans; Mrs. Bellais Thompson, Turvey; Mrs. Taylor, Colchester; Miss Harris, Wimbledon, S.W.; Mrs. Avery, Bognor; Mrs. Cave, Clifton, Bristol; Mrs. Roberts, Eastbourne; Miss Barke, Mansfield; Mrs. Elliott, Ramsgate; Miss Barker, Welshpool; Mrs. Dongsin, Loughborough; Mrs. C. G. Grey, Kensington, W.; Mrs. Gray, Mid Calder; Mrs. Hyde Thomson, Groby; Mrs. and Miss Fitzmaurice, Hassocks; Mrs. Cassels, Greenock; Mrs. Pendlebury, Southport; Miss Gilbert, Brockenhurst; Mrs. and Miss Fitz Brown, Liverpool; Mrs. Calcut (2 cons.), Cricklewood Lane, N.W.; Mrs. Dunn, Stanford-le-Hope; Mrs. James, Upper Holloway, N.; Miss Ellis, Loughborough; Miss Fraser, Penarth.

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Mrs. Giuseppe (2 cons.), Felixstowe; Mr. White Smith, Bristol; Miss Smith, Redditch; Miss Pearson, Redditch; Mrs. Thomson, Glasgow; Mrs. Hall, Nottingham; Mrs. Lawder, Wington; Mrs. Longmore, Warsash; Mrs. Robinson, Dublin; Miss Dixon, Great Ayton; Mrs. Benyon, Reading; Miss Treeby, Caterham; Mrs. Picker, Ayr; Miss Coddington, Redbridge; Mrs. Tupper; Miss Calvert, Warrington; Mrs. W. Samuel, Prince's Gate, S.W.; Mrs. Leslie, Newmarket; Mrs. Caleys, Ealing, W.; Miss Mutton, Hove; Mrs. Montague, Regent's Park, N.W.; Captain Reeves, H.M.S. Liverpool; Miss Huddleston, Bury St. Edmunds; Mrs. Sanders, Woolwich; The Misses Holmes, Sherwood; Miss Attfield, Ebury Street, S.W.; Mrs. Brigden, Sittingbourne; The Misses Shipton, Streatham, S.W.; Mrs. Stedman, Dartford; Mrs. Brookeby, Leicester, Mrs. Sparke, Eaton Square, S.W.; Mrs. Abbott, Baron's Court; Mrs. James, Upper Holloway, N.

Miss Cartwright, Harrow; Mrs. Pinn, Fulham, S.W.; The Huddersfield Needlework Depot, Huddersfield; Mrs. Ryan, Wimbledon Common; Mrs. Wollheim and Miss Langdon, Harrogate; Miss E. Moccatta, Great Cumberland Place, W.; Miss Roe (2 cons.), Gosport; Mrs. Standing, Brighton; Miss Bellis, East Molesey; Lady Elinor Dennison; Mrs. Muirhead Collins, Oakley Street, S.W.; Miss Lydekker, Earl's Court, S.W.; Miss Sturtevant (2 cons.), St. Leonards-on-Sea; Mrs. Gilbert, Brockenhurst; Miss Humphreys, Reading; Mrs. Potter, Putney, S.W.; Miss Willock, Worthing; Mrs. Beal, Harlesden.

**THE PENALTY OF FAME.**

The following from the "Daily Mail" is strongly recommended for the perusal by any officer of either Service feeling in need of an emetic:—

**READERS' SUGGESTIONS FOR THE FLYING CORPS.**

"Observer's" letter in the "Daily Mail" on Saturday, entitled "What can we call our airmen?" has brought a flood of letters and suggestions.

R. Robins, 8, Viewland-road, Plumstead, S.E., writes:

"Why not 'Sammy,' after their popular and intrepid leader, Commander Samson, R.N., and as they themselves affectionately designate him? It would serve the double purpose of distinguishing the Navy from the Army wing of the Service and perpetuating the memory of a man of whom England has every reason to be proud."

"Why not go to Shakespeare," writes Mygs, 196, Shelborne-road, Bournemouth, "and call them 'Ariels'?"

'All hail, great master! Grave sir, hail! I come

To answer thy best pleasure; be't to fly,

To swim, to dive into the fire, to ride

On the curl'd clouds; to thy strong bidding

Task Ariel and all his quality.'

—'Tempest.'

Among the many other suggestions "Dicky-Bird" is most favoured. Others are:

Air Jacks	Dickie Skimmer	Humming Birds
Airy Alf	Dickie Swallow	Jim Crow
Airy Bobs	Dickie Dare	Skylarks
Billy Buzzfly	Dragon-Fly	Sky Pilots
Billy Drake	Flying Flighters	Sky Terriers
Blue Birds	Harry Hawke	Swifts
Bill Scarers	Harry High	The Petrels
Cherubs	Harry Williams	Towering Jacks

Some correspondents urge Peter Pan, as the airmen form the youngest branch of the Services and fly over the "Never-Never Land."

[Never since aviation began has the ingrained vulgarity of the editorial system of the "Mail" been more glaringly exemplified.—Ed.]



## NEWS FROM DENMARK.

THE AEROPLANE's Danish correspondent writes:—

The casualty list of the German Feldflieger Department, published in "Flugsport" issue January 13th, contains the following names:—Lieutenant Otto Thelen, taken prisoner by the English; Lieutenant Schulz, taken prisoner by the English; Lieutenant Frobenius, taken prisoner by the English; Lieutenant Rahn, taken prisoner by the English; Lieutenant Meyer, missing; Vizefeldwebel Becker, missing; Lieutenant von Osterroth, wounded; Lieutenant von Bojanowsky, wounded; voluntary aviator Lietz, died from illness; Lieutenant von Creytz, missing; voluntary aviator Sub-Lieutenant Liehr, missing; Ober-Lieutenant Deunert, missing; Lieutenant Dähn, missing; Lieutenant Riedel, heavy wounded by accident.

In the casualty list of the Bavarian Feldflieger Department appears Lieutenant Ungewitter as wounded. On November 3rd the naval aviators Frost and Klette undertook a practise flight from Johannisthal; engine trouble forced them to land by Luckaw. The biplane, which was piloted by Frost, fell from a considerable height, burying the passengers, who were killed at once. On the day of the new year the voluntary instructor Heumann had a fatal accident by Halberstadt, his monoplane side-slipping when he banked at a height of 1,500 feet. Heumann got killed at once, while his passenger, the voluntary pupil Daubert, got only wounded slight. And on December 18th the aviator Gruse met with an accident at the aerodrome at Darmstadt. Gruse got heavy wounded, while his observer, Lieutenant Kohl, was killed.

As supposed correct by Ed. in an earlier issue of this paper, the purpose of the three raids by the French aviators on Freiburg was to destroy the aircraft works of the Automobil-und Aviatik A.G., which had got moved there from Mühlhausen, when Germany was mobilizing. For according to an announcement in "Strassburger Post" new works are being erected.

Undoubtly "Flugsport" is correct in reporting the Russian air service to have failed on the eastern theatre of war, the chief cause being lack of aeroplanes, the Russians having lost many of them, 10 aeroplanes in the last battles by Lodz and Lowiez alone. With which state of affairs agrees even the notice from the Petrograd governor: "that the commander-in-chief of the Russian Army will pay 5,000 Rubles to him who renders it possible to conquer a hostile aeroplane. Another award of 5,000 Rubles is paid for the delivering up of a damaged aeroplane, and 10,000 Rubles for undamaged."

And from the following report is learned both the care taken by the Russians to keep their resting aeroplanes, and that an aeroplane fight can well be fought on the ground. The Danish newspaper "Nationaltidende" learns from its Petrograd correspondent that the Russian aeroplanes are very useful in the fights in Poland for reconnoitring service. On such a patrol fight the aeroplane with its passengers, a Russian Major and a lieutenant, rose above the German positions, and was fired at violent. A shrapnel exploded near the aeroplane, which got quite wrapped up in white smoke, while the planes got perforated, and a shrapnel bullet hit the lieutenant in his heel.

Yet the officers stuck to their course, rising steady. Another shrapnel bursted, however, above their heads, some pieces hitting the petrol tank, which got smashed. So they were compelled to glide down, alighting near to the hostile lines. The German hurried as quick as possible to the place where the aeroplane must descend, while at the same time three Cosacs appeared from the opposite side; they had kept themselves hidden in a little wood and, galloping their horses, now tried to gain a march on the Germans. In spite of the heavy fire started from the German trenches the three Cosacs succeeded in arriving just the right moment to the landed aeroplane, where the aviators were set quick on the horses, and in a shower of bullets they were fortunate enough to return safe.

The German soldiers, annoyed of course much at the aviators succeeding in escaping, consoling however in being able of bringing the aeroplane back as a booty, wherein they should even fail. At the outskirts of the wood a Russian line of rifles appeared, opening a violent fire, thus compelling the Germans to cover in their trenches; and later the Russians succeeded themselves in rescuing the aeroplane.

## An Exemplary Landing.

An eye-witness sends an interesting description of an accident which occurred to a military pilot on a Martinsyde "tabloid." Apparently a backfire in the engine set light to the carburettor in the air, and the pilot, in the words of our correspondent, "like Zachæus, in the New Testament, made haste to come down." According to the description, he made a steep dive, and about twenty feet from the ground banked the machine perpendicularly, so that it side-slipped and hit on one wing-tip, afterwards cartwheeling onto its nose. The pilot then got out quite uninjured. The machine was burnt.

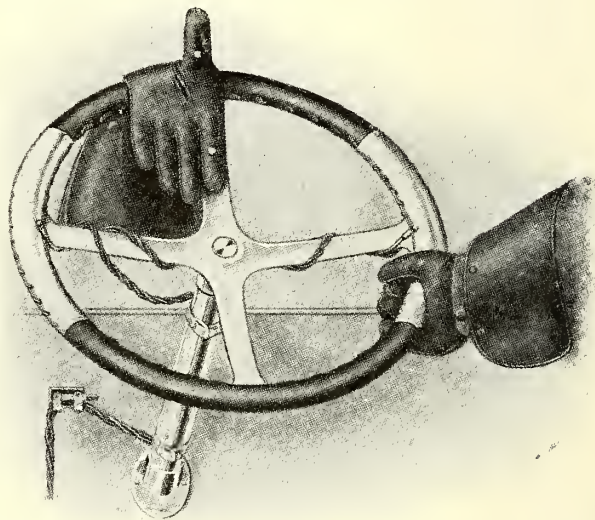
If the description is correct, it shows a high degree of ability on the part of the pilot, for he apparently adopted the one safe way of getting down to earth before being burned. In the ordinary way, if any of these fast machines which glide for a long while catch fire, the pilot is likely to be badly burned within a few feet of the ground before the machine pulls up, and if he tries to glide to a good piece of landing-ground under similar circumstances he is also likely to be burned; whereas, if he dives straight for the ground immediately the fire starts, he gets down quickly, and then, by performing a wing-tip landing, he has at any rate a chance of getting out of the machine before it catches alight completely. The description given above amounts practically to M. Helen's experimental wing-tip landings on the Nieuports.

It is reported that one of the mechanics examining the wreck of the machine found a brass plate, presumably off the magneto, bearing the word "Frankfort," and thereupon remarked: "The — engine's a German! No wonder it tried to burn him."

## A Cure for Cold Extremities.

Apropos the cold hands felt by aviators at high altitudes, to which reference was made last week, it is of interest to know that quite a practical way of overcoming this difficulty was introduced to THE AEROPLANE's notice recently. The scheme was originally invented in America for the benefit of car-drivers, and operates as follows:—

On the steering-wheel of the car there are clamped or laced two pieces of metal, each covering about six inches of the



circumference of the wheel and each passing something less than half the way round the thickness of the rim. These are insulated from the wheel and one another, and are connected to the opposite terminals of a 6-volt battery carried in the car. On the opposite side of the wheel are clamped two similar pieces of metal similarly connected to the battery. The driver wears a pair of special gloves, made of wind-proof and water-proof leather, inside which is a pair of woollen gloves in the form of a lining, each of which is connected to the outer gloves by two push-button clips of the kind commonly used for buttoning the wrists of gloves.

One of these clips is situated in the thumb and one in the

first finger, the metal base of the clips being outside the leather gloves and acting as electrical contacts. From the clip in the first finger there starts a thin high-resistance wire cased in asbestos, and this runs to the base of the first finger, up to and round the top of the second finger, down to the angle of the third, and so on to the fourth, and travels across the back of the hand, round the thumb, to the corresponding contact button there.

When the battery is connected and one is wearing the gloves one merely grips the wheel so that the finger contact comes on one half of the metal clip and the thumb contact on the other, thus closing the circuit and passing a current through the wires inside the gloves, which become hot, and warm up the hands. If the hands become too hot one has, of course, only to take the contact button off the wheel, or grip the wheel in some other place which is not covered by the metal.

A similar idea can be worked out easily on an aeroplane. If the machine is fitted with a wheel of course an exactly similar system operates, whereas for a stick-control one need merely clamp two pieces of metal one on each side of the stick. If it is thought that smooth metal might cause the hand to slip on the control, it is quite a simple matter to arrange two sections of wire gauze on the stick instead, or it would be equally easy to carry two pieces of metal to some fixed point on the machine, say at the bottom of the map-case or anywhere within easy reach of both of the pilot's hands, and he could then warm either hand while controlling the machine with the other.

Tests show that a rise of 40 degrees was obtained in six minutes, and a rise of 61 degrees in twelve minutes, this with a current consumption of  $5\frac{1}{2}$  amperes from a 6-volt battery, both gloves being in operation. In another test, a pair of these gloves which had been used for two winters by a driver of a car covering a daily distance of 28 miles showed a current consumption of 2.45 amperes for one glove and 2.65 amperes for the other, one glove being soaked in water before being tested. It seems likely that the system will be taken up by a well-known firm in this country, and it should certainly meet with the approval of Service aviators.

### Aluminium Solder.

Now that so much aluminium and aluminium alloy is used in aeroplanes and aero-engines it will interest many firms to know of what seems to be a really reliable aluminium solder. This is known as the A.B.C., and has stood the test of a good many years' use. Apparently, also, it can be used for soldering other metals to aluminium, which may on occasion be very useful, especially, for example, in fixing screw-studs permanently in aluminium. Holes in castings, such as crank-cases and gear-boxes, can be filled in with A.B.C. solder, and it is also useful in dealing with worn guides or bolt-holes. The efficacy of the product is vouched for by so experienced a motor firm as Crossley's, Ltd., who state that they have been using it regularly and that they have never found any variation in the quality, which is more than can be said about a good many makes of solder. Inquiries should be addressed to Mr. W. E. Proctor, consulting engineer, Parliament Mansions, Orchard Street, Victoria Street, S.W.

### The M. & G. Biplane.

On Friday evening of last week the Mann twin-pusher biplane flew successfully at the first attempt, piloted by Mr. W. Rowland Ding, of the N.A.C. School at Windermere. A further trial was made next morning, when the machine went up to 300 feet and right out of the aerodrome above the Edgware Road. During a second circuit Mr. Ding flew for a period estimated at about a minute with his hands off the wheel; the engine at the time was running on approximately eight cylinders and not at full throttle.

Mr. Ding reported the machine inherently stable in a promising degree, and is confident that she will do 75 m.p.h. with some minor alterations. The actual speed attained was registered by the Ogilvie air speed indicator as 55.6 miles per hour.

### Southampton and District.

The energetic Sopwith pilot, Mr. Mahl, has been busy lately, for despite bad weather he has handed over several seaplanes to the Navy. The first on Tuesday week was a Sunbeam-engined machine which lifted unusually well for a large machine, and proceeded down Southampton Water at a

splendid pace. Another machine—a scout—was out on Wednesday, and the first private test flight took place in the morning. Mr. Mahl was in a merry mood, for his feats were wonderful, if not a trifle reckless. In the afternoon Mr. Mahl quickly put the machine through its acceptance tests, and there is no doubt that if it comes to close quarters with a hostile machine the latter will have to be a particularly good one if it is going to get the better of the Sopwith. The original Schneider "tabloid" was brought out on Friday, and its performance was better than has ever been seen here before, particularly in the way of speed, which is amazing.

On Saturday, February 20th, a Sopwith-Sunbeam tractor came out for the first time with Mr. Mahl. The machine was very steady, and after flying well for about an hour and a half, it came back for inspection. At the same time the Sopwith tabloid, familiarly known as "Schneider," was out at a great height. Many flights have been made in the district on Sopwith tractors and Wight and Farman "pusher" machines.

### School and Weather Reports.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
<b>Hendon ...</b>	Fine	Fine	Wet	Wet	Fine	Fine	Windy
<b>East Coast ...</b>	Fine	Fine	Wet	Fine	Wind & Rain Partly Fine	Fine	Fine
<b>South Coast ..</b>	Rainy	Show'v	Fine	Windy	Fine	Fine	Fine
<b>Lake District</b>	Fine	Fine	Windy	Rain	Windy	Fine	Windy

**Hendon.**—AT THE GRAHAME-WHITE SCHOOL.—Instructors: Messrs. Manton, Russell and Winter. Pupils, with Instr.: Prob. Flt. Sub-Lieuts. Cain, Johnson, Hood, Dunn, Everett, Harlds (new pupils), Ferrand, Irving, Reed, Tollemache and Morrison. Doing strts.: Prob. Flt. Sub-Lieuts. Johnson, Cain, Reed, Irving. 8's or circs.: Prob. Flt. Sub-Lieuts. Souray, Irving, Cain. Certificate taken: Prob. Flt. Sub-Lieut. Souray. Machines: 4 Grahame-White propeller biplanes.

AT THE BEATTY SCHOOL.—Instructors: Messrs. G. W. Beatty, G. Virgilio, W. Roche-Kelly and C. Prodder. Pupils with instr.: Lieut. Rimington (58 mins.), and Messrs. Gordon Bond (23), P. E. Cornish (36), G. Beard (30), G. Perrot (45), T. F. Roche (30), B. de Meza (10), J. H. Ormsby (15), A. G. Hayward (10), V. E. Fanning (12), Gerrit Forbes (38), H. H. Bright (48), R. F. Laver (35), Vickers (15), P. C. Cooper (25), L. Monfca (10), Y. K. Leong (38), and B. B. Lewis (20). 8's or circs.: Mr. G. Merton (taking extra practice) out on single-seat brevet machine nearly every day, doing some very fine banking and glides, one spiral from 2,500 ft. Certificate taken by Sub-Lieut. G. Beard, R.N.A.S. Machines: Beatty biplanes fitted with dual control.

AT THE LONDON AND PROVINCIAL AVIATION CO.'S SCHOOL.—Instructors: Messrs. W. T. Warren and M. G. Smiles. Pupils doing strts. alone: Messrs. Lincoln, Watson, Moore, England, and Derwin. 8s or circs.: Messrs. Noakes and Bransby Williams. Machines: 2 L. and P. tractors. Messrs. Noakes and Bransby Williams took excellent certificates on February 20th and 16th respectively, each attaining over 700 ft. in altitude test.

AT THE RUFFY-BAUMANN SCHOOL.—Instructors: Mr. E. Baumann and the James Brothers. Pupils with instr.: Messrs. Brown (10, 12, 12 mins.), Kenworthy (11, 12, 12), King (12, 10), Jackson (12, 10), Blandy (15). Machine: 60 Caudron.

AT THE HALL FLYING SCHOOL.—Instructors: Messrs. J. L. Hall and J. Rose. Pupils with instr.: Lieuts. Moncrief and Blyth, and Messrs. A. Davy, Furlong, Waterson. Strts or rolls alone: Lieut. Blyth (62 mins.), Mr. Davy (46), Mr. Waterson (10); (two former taking complete control). Mr. McConnochie 4 circs. at 450 ft. and a fig. 8. Machines: Hall tractor biplanes. On Friday Mr. Hall was busy testing brevet machine.

**Windermere.**—AT THE N.A.C. SEAPLANE SCHOOL.—Instructor: Mr. W. Rowland Ding. Pupils with instr.: Messrs. G. L. Railton (15 mins.), A. Johnson (35), R. Buck (15), S. J. Sibley (31). 8's or circs.: Mr. R. O. Lashmar (for extra practice). Machines: N.A.C. propeller biplane, Avro tractor biplane. Mr. Ding up with Lieut. T. Lindsay Bainbridge, who did some revolver practice. Avro out with new type floats which were an immense success, Mr. Ding taking her up to 1,500 at first attempt. Mr. R. O. Lashmar has been giving instruction to fellow students.



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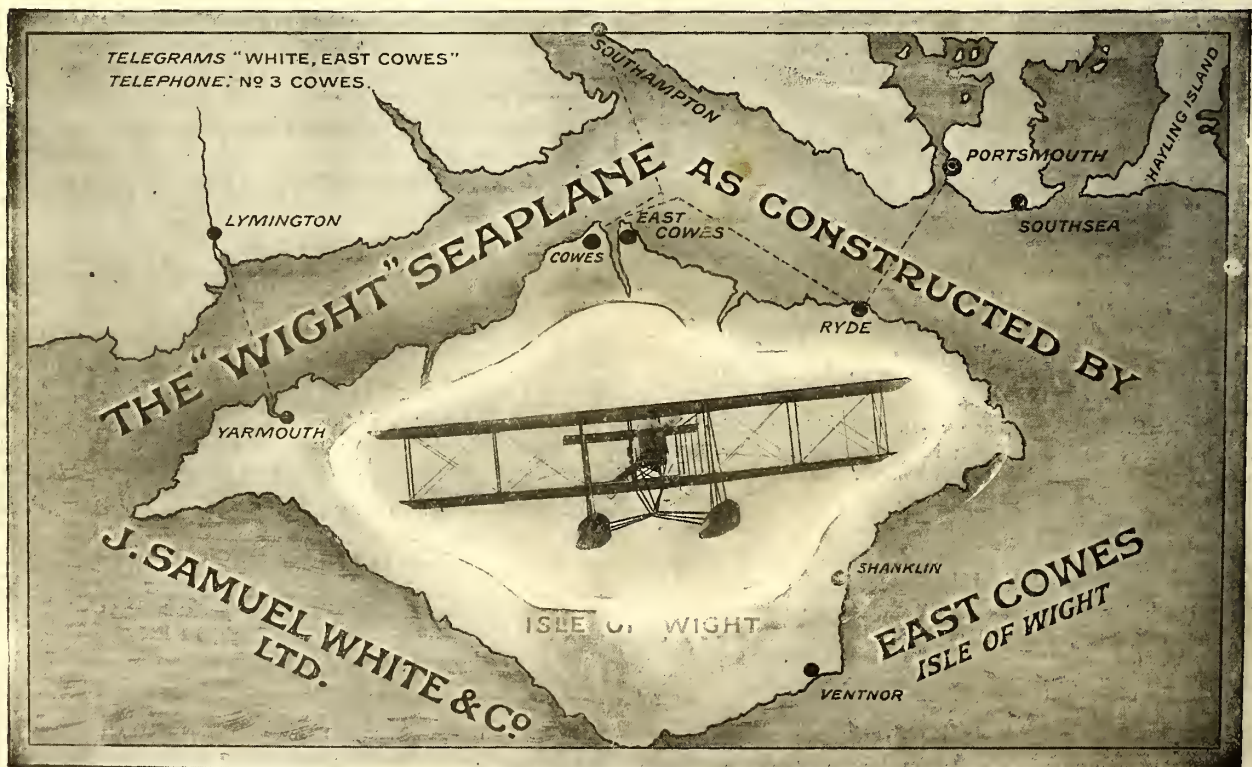
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# THE AEROPLANE



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No. 9

## SOME MORE PILOTS.



(Photographs from the "F.N.B. Series," by F. N. Birkett, 97, Percy Road, Shepherd's Bush, W.)

Left to Right:—Mr. F. Warren Merriam, Chief Instructor, R.N. Air Station, Hendon; Flight Sub-Lieut. T. H. England, R.N. (Cert. 950), Grahame-White School; Flt. Sub-Lieut. E. R. Moon, R.N. (Cert. 933), Caudron School; Flt. Sub-Lieut. E. T. Anstey Chave, R.N. (Cert. 1065), Beatty School; Flt. Sub-Lieut. K. F. Watson, R.N. (Cert. 1001), G.W. School; Warrant Officer W. H. Ellison, R.N. (Cert. 958), R.N. School; Mr. G. Merton (Cert. 1059), Beatty School; and Mr. G. W. Bransby Williams (Cert. 1084), L. and P. School.



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## R A I D I N G.

In these days, when one speaks or writes of a "Raid," with a capital R, one is generally understood, even by the man in the street, to refer to an occasion on which sundry young gentlemen in aircraft, of any belligerent nation, have made themselves, or have endeavoured to make themselves, acutely unpleasant by dropping bombs on some person or persons unknown, who happen to occupy territory behind the enemy's lines. It is generally piously believed that the said persons unknown are enemy troops, or, at any rate, people actively assisting in the naval or military operations of enemy forces, and, in fact, orders are distinctly issued that damage to civilian property, and what the Germans expressively call "open - not - within - the - zone - of - military - operations - towns," is to be avoided.

Unfortunately for the fulfilment of such orders, it is not explained how an aviator at a height as near 6,000 feet as his machine will take him is expected to distinguish between a civilian residence, or a hospital, and a military billet, or how an aviator flying over a town ten or twenty miles behind the fighting line is to tell whether it is being used as a place of rest for troops or not. Consequently it seems rather natural that an aviator should operate on the good old principle, formerly supposed to be peculiar to Donnybrook Fair, "Wherever you see a head, hit it." Which may be modernised into "Wherever you see a building which will make a bang, drop a bomb on it."

### Humane Bomb-dropping.

Also, even if an aviator is absolutely certain that a certain building is of military importance, and, with the best intentions in the world, determines to blow it up without damaging civilian property in the neighbourhood, his good intentions may be thwarted, and he may discommode the local hospital or the local brewery, and so stir up ill-feeling which the mere dissemination of the local general and his staff would not have caused. It is therefore well to realise that bomb-dropping is not an exact science, and that air-raiding is not yet an operation which can be carried out strictly according to rules laid down in an official hand-book. In fact, speaking in a strictly military sense, the air-raider stands in about the same relation to the artillery-observation aviator or the regular reconnaissance pilot and observer as does a Bashi-Bazouk, or, say, as did Strathcona's Horse in South Africa, to regular cavalry.

Which is not to say that Bashi-Bazouks are not good and even useful fighting men, or that Strathcona's Horse did not do good work in South Africa, but merely that either corps, properly drilled, disciplined, organised, exercised, and equipped, would have been made much more valuable and more effective. Air-raiding is so young a performance that one cannot reasonably expect it to be done strictly by numbers as yet, but the sooner such operations can be carried out with military precision the sooner they will become really effective. Those who saw the thirty-five machines of the Royal Flying Corps start at absolutely regular intervals from the hill at Netheravon

last July—for the benefit of various foreign military officers, many of whom are now fighting against us—must have been struck by the potentialities for offence of such a force when developed to an effective strength. It is therefore a question of some moment whether the Allies or the Germans are likely to reach effective strength and proper organisation first, and it is well to remember that the German genius lies in the direction of organisation.

### What is Effective Strength?

One interesting question is, what constitutes an effective strength? Forty aeroplanes carrying 200 lbs. of explosives apiece represent a total explosive load of something well under 4 tons, or the equivalent of a couple of light motor lorries full of ammunition, and when one considers how many tons of heavy shell artillery have to pump into a small town to do any real damage one begins to see how far away everyone still is from the possibility of serious aerial bombardment. Added to which there is the fact that a bomb drops more nearly vertically than does a shell from a heavy gun—except, perhaps, a howitzer shell—and so is more likely to miss a building altogether and bury itself comparatively harmlessly in the mud.

It seems, therefore, as if 400 aeroplanes are nearer an effective strength for a serious aerial bombardment of a town of moderate size than are 40. As an alternative, of course, 40 aeroplanes might make 10 trips each, or 80 might make 5 trips. The essential thing is the quantity of explosives carried in the course of the bombardment.

Yet another important point is the size of the bombs. Naturally, if one can get a single 100-lb. T.N.T. bomb home in the right spot, it is going to do far more damage than 5 bombs of 20 lbs. each, for it would penetrate further into a building before exploding, but, if one misses one's mark, half one's effectiveness is gone straight away, and two 100-lb. bombs mean that one's full capacity is limited to two shots, until such time as a really big bomb-carrying aeroplane is evolved, on which subject much might be written.

It is impossible to dogmatise on the question of whether one big bomb is better than five little ones, for it all depends on what the objective may be. For instance, if one wants to attack troops billeted in a village, or in camp, or on the march, quantities of small bombs are obviously better, for no great penetrative power is needed, and, though one 100-pounder would, perhaps, do more damage if it landed in the middle of a column on a road, the probability of its missing altogether is great, and one has more chances with the five 20-pounders.

On the other hand, if one wants to destroy an air-ship shed, or a cathedral which one is credibly informed is being used as a magazine for ammunition—one hopes that this only applies to German stores—or an important factory, or the headquarters billet of the opposing army, one would naturally choose the two big bombs, and make up one's mind to a second trip if they both failed to score, for in this case everything would, in any case, depend on accuracy of drop-



ping, and high penetration would be of great importance, provided aim was correct.

#### **A Problem in Accuracy.**

The greatest problem of all that the conscientious air-raider is up against is the difficulty of ensuring accuracy in bomb-dropping. Compared with this, artillery shooting is as easy as kissing your hand.

The gunner has a weapon firing from a fixed point. If the ammunition manufacturer has done his job properly, despite strikes and trade unions, the gunner knows that a shell of  $x$  lbs. weight will leave the muzzle of his gun with an initial velocity of  $y$  feet per second. He is firing at a fixed point, or almost always so, and his only unknown factor is windage, which can not only be fairly accurately gauged, but is only likely to have a slight effect on a body possessing the momentum of a heavy shell. He has all sorts of prettily arranged tables for elevation, deflection, and so forth, and his whole job is reduced almost to a mathematical certainty. Also, in bombardment, he has the advantage of being able to fire again from the same spot after having his last shot observed from an aeroplane, a balloon, or some suitable elevation, such as a church spire—one hopes again that only Germans would use a sacred edifice for such a purpose.

But take the case of the bomb-dropper. His projectile starts with an initial velocity horizontally over the ground, which he would rather be without, and without the vertical velocity he would like it to have to carry it without deflection through any cross-currents of air it may meet before it reaches its highest speed. Besides the horizontal velocity in the direct line ahead of the aeroplane it probably has an horizontal velocity laterally, owing to the machine drifting sideways, unless the pilot is flying directly into the wind or against it. Given that he knows those velocities accurately, which he does not, and could allow for them accurately, which he cannot, he then has to hit a certain visible and fixed spot on the ground from a certain altitude indicated more or less inaccurately by an aneroid barometer which is more or less out of order, or, anyhow, may indicate incorrectly owing to atmospheric pressure changing while he is in the air.

#### **The Euclidian Point.**

Now, supposing he knew his altitude to a foot, and his horizontal movement with equal certainty, there is only one point (using Euclid's definition literally) in the whole circumambient atmosphere at which a bomb of given weight and given head-resistance (according to its shape) can be let go in order to hit that given spot on the ground. That precise point has to be found, and the bomb has to be released at precisely the right moment.

In still air, an 80-mile-an-hour machine is moving at 120 feet per second over the ground, so a misjudgment of a second in pulling the string means being 40 yards short or long of the mark, even supposing everything else is correctly calculated, which may give some idea of how utterly impossible it is to hope for accuracy in bomb-dropping till a marvellous instrument is evolved which, when the pilot has spotted the mark through its sighting gadget, will calculate the exact speed of the aeroplane over the ground, calculating its exact height above the ground, manoeuvre the machine to that mathematically correct point in the air at which the bomb must be released, and then release it at the correct decimal of a second. To use an expressive Americanism, it will be "some instrument."

However, that is why the most successful bomb-droppers prefer to trust purely to eye and hand, merely aiding matters by standing the machine on its nose to take as much forward way off the bomb as possible, and to give it some vertical velocity before it is let go. Also, it shows what nonsense is written by some

people who talk as if a bomb-dropping aeroplane were a highly accurate gun, with a range of 150 miles or so, which could be used with certainty to cut the enemy's lines of communication whenever desired.

#### **Some Air-Raiders' Experiences.**

Mention of this method brings one back to the subject of raiding, as such. Considering the small number of machines employed, the recent R.N.A.S. raids may be regarded as successful of their kind. One officer relates how he was flying steadily along, some little way behind another pilot, when the latter, who has already distinguished himself as a bomb-dropper, suddenly dived, and a moment or two afterwards the roof of a big hotel below them suddenly opened out like a tulip and burst into full flower—of flame embroidered with smoke. It appears to have been a very joyous sight, though, perhaps, not quite so humorous in effect as the crumpling dome of the big mosque at Adrianople so graphically described a couple of years ago by Mr. Sabelli. A big, fat, round dome would look so absurdly like a cocoa-nut as it fell to pieces.

Apparently, however, all the officers concerned in recent raids have not had such an entertaining time. One of them certainly set a fine example of pluck and endurance. On his way out he got a bullet through his thigh, another one ripped his coat all up the back, and a third hit the radiator of his engine, though fortunately not so as to let all the water out. In spite of this, he kept going, got to his objective, dropped his bombs with good effect, and came safely home. Except for a limp, he is as cheery as ever.

Another one, whose machine had developed a fit of sulks, or was suffering from "scientist's paralysis"—which is a rather common disease in aeroplanes, as will be described hereafter—and took something like two hours to get up to 4,000 feet, determined to have a go at the enemy in spite of orders not to fly at less than 6,000 feet, so he went and hid himself over the top of a convenient cloud and dropped his bombs through it when he reckoned he was somewhere about over the enemy's position.

#### **The Autopsychologist.**

Yet another, apparently the same whose psychological sensations were so minutely analysed by a medical correspondent in the "Times" the other day, went into what looked like a nice fluffy white cloud while over the sea, dis-orientated himself utterly in its dark interior, turned upside down through losing his sense of direction, and only realised that he was upside down when things began falling out of his pockets. His belt broke, and he had to hang on to the fuselage by knees and elbows, but when he came out of the cloud and found the sea apparently over his head, he managed to pull the machine right side up and continue his journey. He describes his sensations when lost upside down in the clouds as being perfectly peaceful and void of fear, though on coming out and finding he was still alive he felt acutely depressed. Which somehow reminds one of another young officer, who has more liver than is good for him. When one greets him affably in the morning with a cheery "Well, George, how are you to-day?" he invariably replies in a resigned tone, "Oh! I merely wish I had died in the night."

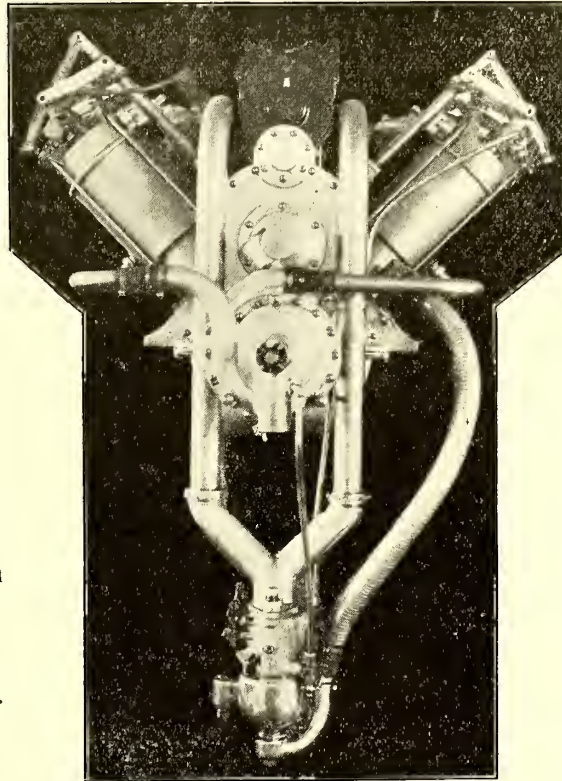
The inverted cross-Channel flier says that afterwards he went on to his objective and dropped his bombs, whereupon his spirits returned, and he felt so annoyed at having nothing else to throw on the Germans that he threw his match-box at them. I strongly object to this action, as it is a distinct plagiarism on a young friend of mine, a seaplane pilot, who, in default of bombs, is credited with having thrown a golliwog mascot at a German battleship near Cuxhaven. The R.N.A.S. must try to be more original in future.

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Yet another pilot, who apparently struck a particularly warm corner of the air, said that there was literally "a sky full of shrapnel." Which reminds one of another pilot who on one occasion on a fine sunny day happened to strike the altitude which was the exact limit of the vertical range of rifle ammunition, where the bullets come to rest for an instant before starting to fall. Naturally, for the last fifty or sixty feet of their rise, their speed is very small, so he saw them glittering in the sun as they came up around him, and he described the effect as "just as if it was raining upwards."

#### **That Machine-Gun Trouble.**

Here is a matter affecting raiders which seems worthy of note. After one raid it was said by one of the men on the spot that a certain pilot's machine came back with a neat little row of holes through one of the planes, from the leading to the trailing edge, caused by a stream of bullets from a machine-gun. It seems a plausible story till one begins to work out relative speeds. The day was calm and the machine in question does over 80 miles an hour, but call it 80, which represents almost exactly 120 feet per second. Now, the best rate of fire on record for a machine-gun is 600 shots a minute. No gun will get off 600 shots in a minute, and few will fire at a rate of over 500 per minute; but let us give the gun the benefit and allow that it may fire 10 shots in a second.

That means that the aeroplane travels 120 feet while the gun fires 10 shots, or that it travels 12 feet between each shot. Consequently, if one bullet misses a wing with a 6-foot chord by three feet in front, the next will miss it by three feet behind; or, if one bullet just chips the leading edge, the next will be 6 feet behind the trailing edge; or, if one bullet just misses the engine, the next will miss the pilot, on nearly all machines. That is to say, a machine-gun really has only one chance of hitting anything of importance.

This should be some consolation to pilots who have been told by others that it is easy to bring an aeroplane down by creating a "fire-zone" in front of it and waiting for the machine to fly into it. It seems also to indicate that the danger from flying over machine-gun fire is considerably exaggerated.

#### **A New Aeroplane Disease.**

Yet another matter of very great importance is that strange, new disease of aeroplanes which is likely to become known as "scientist's paralysis." It seems to be the result chiefly of insisting on a factor of safety against breakage of a magnitude which is shown to be necessary by scientific calculation, and not by practical test. Many a good machine has been condemned as unfit for service because some tame genius with a slide-rule has said that it is not safe, although no machine of the type has ever broken when in use, and although the machines designed by the aforesaid scientist or his brethren-in-theory may have failed dismally. More good machines still have been turned into bad machines which refuse to fly fast or climb quickly because the human calculating machines have insisted on their being strengthened to withstand some shock they are never likely to receive, or have insisted on some useless qualification, in the way of weight or fuel carrying capacity, which has spoilt their flying.

No one has insisted more vehemently on adequate strength than I have. Strength and stability have long been two of my pet fads; but, unfortunately, when the wild, untamed scientist once gets a practical idea fixed into his head, he is liable to carry it to extremes; and both these necessary qualities, useful as they are, seem to be in danger of being overdone by the Government's civilian scientists of both Services. If it were ever necessary to sacrifice speed and

climb to experiments in strength and stability it should have been done in time of peace and not in war time, for then other experiments might have corrected the harm done to the machines' flying qualities.

As it is, the Service aviator is between the devil and the deep sea. If he flies a machine which some high-speed mathematician with a water-cooled slide-rule will guarantee not to break under any shocks it may meet in the air he stands an excellent chance of being shot because the machine will not climb high enough to take him out of range. As one pilot put it graphically, if inelegantly, "It's no worse to break your neck than never to be able to sit down again."

#### **Weight and Sea.**

When one hears of the erstwhile despised German weight-and-seaplanes, at the Cuxhaven raid, dropping bombs from 5,000 or 6,000 feet on the seaplane carriers one wonders how they did it, with their clumsy workmanship and their great, heavy, fixed-cylinder engines. We have had engines as good in this country for years, but they were despised and condemned. Our workmanship is better than theirs, so we must be able to make our machines lighter for the same strength. Our seaplanes have been a good deal higher than that, and will go higher again; but those who know best, and feel the trouble the most because they have to fly them, tell me that the more scientifically perfect certain machines become the less the said machines are inclined to put science to practical test at high altitudes. And as regards land-going machines, one has only to read the officially approved stories of the "Eye-Witness" to realise how often German aeroplanes escape by superior speed and climbing power from scientifically paralysed scouts, which shows that it is possible to be too cautious, as well as too brave, in a drawing-office.

Apparently the only machines which really baffle the scientists are the little fast scouts, and probably if science discovered a thoroughly mathematical way of "scaling up" high-speed stresses from wind-tunnel experiments it would prove that most of the scouts fly so well because they are too weak to carry their own fuel supply, and that they only carry a pilot and bombs as well by hoping for the best on a factor of safety which on paper is a minus quantity.

Still, the fact remains that they, and some others which are not so difficult to fly, are still good enough to act as Bosche-catchers, and because such machines do exist one is inclined to wonder mildly, and with all due respect to the powers that be, whether it is possible that young officers can be allowed to go air-raiding on machines which can only just stagger off the ground or water, and, after jettisoning ammunition to gain altitude, exhaust their fuel supply before they have got high enough to be fairly safe from rifle-fire.

A raid by 20 first-class aeroplanes, each making two trips in the day, possibly in charge of a different pilot each time, is more effective than a window-dressing raid by a hundred aeroplanes, half of which when seen in the air look as if they were returning from an illicit night-club.

It may please a newly promoted squadron-commander mightily to be able to report that all his machines started on a certain raid, and the fact may be put to his credit for a future D.S.O.; but he would be doing better work for the Flying Services generally if he had the courage to report that only a quarter of his machines were fit to start, and that the rest, thanks to scientific meddling and the ordering of alleged aeroplanes from favoured firms who cannot make flying-machines, were only fit to be used with an hour's fuel in the tanks for school work, and could not be reckoned as effective for air-raiding because of their inability to climb quickly or fly fast.—C. G. G.

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## The Duration of the War.

BY ROGER BAYONS.

There is none to whom the duration of the war is not an affair of deep interest. If it could be determined with any degree of certainty all classes would make preparations for the future—preparations which at the present date involve such a great risk of unfulfilment—partial or complete.

Finance and its experts have in the past hundred years cast such a fog of economic theory over war that even the clearest thinker hardly dare consider the future progress of any combat between the armed forces of any of the greater Powers. Money, always of high importance in human affairs, has of recent years usurped a place so exalted as momentarily to bemuse and confuse the skilled student of international polity. He cannot be impartial. He is prejudiced by the atmosphere in which he lives. He cannot, unless he is physically as well as mentally blind, avoid the impressions imposed by his surroundings. The key to truth in world politics is not within his reach until war itself has brought it nearer. Thus surmise is all that he can permit himself if he would be honest.

The soldier of experience, isolated as he is by the customs of his profession from the interplay of civil public opinion, is better able to arrive at a true conclusion in these matters than is the civilian expert. But it is time of war, and the soldier's duty is to fight and not to write.

There are main factors in the determination of the war in so far as the new Germanic confederation is concerned. They are: (i) Lack of men; (ii) Lack of material; (iii) Lack of food; (iv) Lack of money.

Of these the first three are of predominating importance. Any real lack of any of these would finish the contest within a few weeks. Lack of money would lead to a curious position, but would not necessarily affect the progress of the war.

To take the first of the factors mentioned—the lack of men. The total population of Germany at the last census was 65,000,000, and of Austria-Hungary 50,000,000, or 115,000,000 in all. If one assumes that 10 per cent. of these peoples are capable (physically fit) to bear arms that gives the enemy at least 11,000,000 men as a fighting force. The elaborate calculations of Colonel Repington, the late Editor of the "Army Review," based on the conscription figures of the last twenty years or so, brings him to a total much the same as that quoted above. None of the mass of criticism levelled at him was very damaging, and Service opinion seems to place the figure very much higher. Whatever the figure may be, it must not be forgotten that every man in the army of Germany, if not necessarily of Austria, is efficient to a degree only attained in England in the small Regular Army. The physique of the country is as a whole higher as a result of the national system of compulsory military training. Should any doubt this, they have but to look at the results attained in our country in the improvement in the health and strength of the raw recruits who have had, perhaps, four months' training. Again, every German knows the rudiments of military life, and it is, as a rule, only necessary to exercise him until he reaches the standard of fitness now required from which he may have fallen as a result of the conditions of his daily life.

The total losses of the German army in so far as death, capture by the enemy, or wounds which incapacitate from further service can hardly be more than three-quarters of a million, if that. At the end of the year the total Prussian casualties, including all classes of wounds and disease, were officially stated to be nearly 900,000. Even if one trebles this figure to arrive at the total for the whole of Germany one cannot bring the list of casualties higher than three millions. Of this number it is not too much to say that at least two-thirds will be, or are, fit for service again.

A brief study of the casualty lists of any war will show clearly how very low is the percentage of deaths and permanent disablement in the tale of casualties. This being so and accepting the very low estimate of Germany's strength in effective personnel as put forward above it is clear that, whatever the future may hold, the enemy will not for many months to come feel any serious consequences from the diminution of its forces. We and our allies can, it is true, bring many

millions into the field in the course of time, but time is very necessary that training may be carried on. The enemy has the advantage of us in the matter of efficiency, and the months and the years alone can alter it.

Sir Ernest Holden tells us that finance will present no difficulties to Germany for a year to come; that is, no difficulties impossible to overcome. For that period the enemy will remain, if not solvent, at least on a financial basis. At the end of that time perhaps he will be insolvent, but will that matter? Many bankrupts in civil life are far more affluent than the man who remains financially sound. Money becomes of no importance when nobody has any. The lack of money will not be permitted to stand in the way of national existence.

As to lack of food, the imposition of maximum prices and Government control of corn shows nothing save perhaps a certain degree of political unwisdom. If the war were to last three years and Holland, Denmark, Norway and Sweden were to turn against Germany and Austria, then indeed would food become a factor of fatal importance. As it is, there should be no lack of common sustenance for eighteen months at least. Imports of foodstuffs represent largely luxuries. Corn of all kinds, while not sufficient to maintain the nation throughout the years in times of peace because of restricted production due to economic conditions, can and will be grown in quantities sufficient to satisfy moderate demands until early in 1916. As with corn so with meat. Prices will rise, luxury will fade, and rigid economy will oust profusion, but people will not starve yet awhile.

The question of most interest at the moment is Germany's future in the field. In six months she has overrun Belgium, advanced fifty miles into France and a little farther into Russia. Her navy is a little weaker in material and considerably weaker in personnel than it was a year ago. The balance of naval success lies to-day with the allied fleets and will probably remain so in the future.

In Russia she can hope for no more than to hold the Russians back. That in itself would be a great achievement. The exigencies of war elsewhere make it impossible for her to detail a sufficient mass of troops to drive the Russians back on Moscow and Petrograd. And, moreover, should she do so, little would be gained. The vast expanses of Russia, the sparse population, and at this season the thin cultivation of the lands over which a victorious army would have to pass, would render success valueless and unduly expensive. Napoleon was defeated in 1812 from causes which would arise again to-day under similar circumstances. Any advance to be expected must be in France if at all.

In France things have gone much as was expected if the forecasts of Clausewitz are to be accepted. The first great effort of the German army was towards Paris, made surely not so much with the idea of capturing that city as with that of crumpling up the allied forces and keeping them disorganised and on the run, while the rearguard of the German forces entrenched itself securely on a well-chosen line north of the Aisne, where the entire army could lie without danger through the rigours of winter.

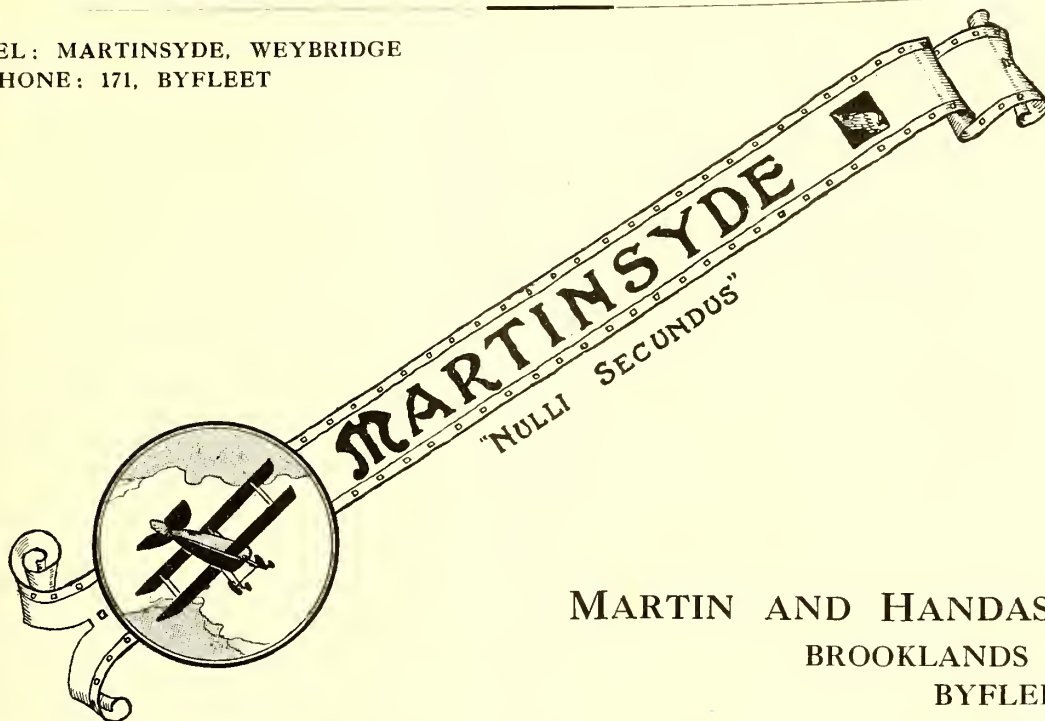
The Kaiser's general staff possibly found greater stiffness with the Allies than was expected, but from the military point of view it must surely be conceded that Germany's progress has been extraordinary. In the spring, Germany will again move, whether backwards or forwards is in the hands of Fate. She has the advantage of a highly trained and well-equipped army and a brilliant general staff. She will have the disadvantage of having to cope with huge armies of fresh men brought against her by the Allies from all the corners of the earth. Final success in the original objective is absolutely impossible, but one has yet to see whether the limited objective so dear to Clausewitz will not ultimately be attained.

To come down to a smaller field—the actual operations of war—one finds that the advent of the aeroplane far from having speeded up the action has retarded it to an astounding degree.

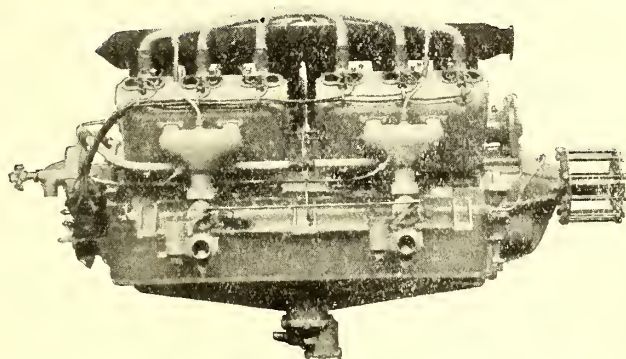
It was once possible to deplete a portion of the first line in

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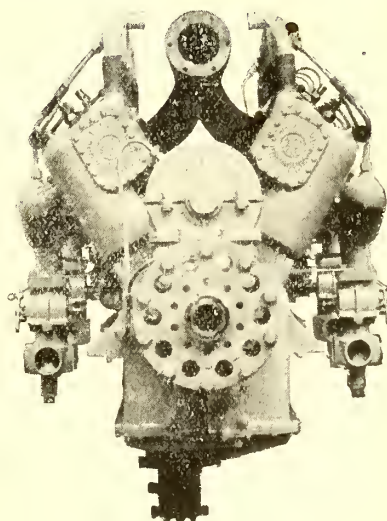


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order that a concentrated attack might be made at another point less strongly held by the enemy. Such a movement stood a fair chance of avoiding detection until it was too late to reply by attacking the depleted position, and all that could be done was to strengthen the threatened part in one's own lines as swiftly and completely as the short time permitted. Helped by the fog of war, which was then as much physical as mental, unexpected complications arose frequently and unthought of combats were of constant occurrence. Boldness combined with good fortune on occasion did much to replace the skill of strategy. A knowledge of the psychology of the enemy was an essential in the successful conduct of war.

The incomplete scouting carried out by the cavalry was frequently ineffective when the opposing armies were in close proximity, and success frequently came because of the fortunate chance that one's plan of campaign did not at any vital point conflict with that of the enemy and when in addition one had made the first bold move.

To-day that is different. The aerial scout working in close contact with the cavalry scout in the early stages of conflict reveals all that is important in the way of positive moves. Nothing is concealed from the scouting army that involves a big movement. War ceases to resemble Kriegspiel and more closely approximates to Chess. It is now rarely possible to risk a move without ensuring the safety of all other parts of

the line. Nothing can be left to chance and the sluggishness of the enemy.

Where a manoeuvre on the grand scale could be conceived and arranged in the course of a day only ten years ago, a week may now be absorbed preparing for the same operations. Each answer of the enemy must be considered in advance and countered in theory before the attempt is made in practice. Strategy before contact is itself altered. Long, slow sweeping, apparently indecisive moves have to be made day after day, while the real objective is held concealed until the enemy—if he does—makes a slip. Tactics to-day when two armies of equal intelligence match themselves one against the other have become one long monotony with not one-fifth of the speed of operations once known. This because of aircraft even in its experimental stage.

Therefore, if we assume that Germany and Austria have men, material, food and money, or the substitute for it, sufficient to last until the summer of, say, 1916, she will lack neither the determination nor the skill to fight until that time. In the two years of the war there will be, if one's assumptions are correct, only that amount of operations as would have filled six months of the wars of the past. This slowness of action is entirely due to aircraft—the new invention which was either to accelerate war or cause all wars to cease—which can never be.

### A New Duty.

The King has accepted from the Dover Anti-aircraft Corps a piece of the German bomb, suitably mounted and engraved by members of the corps, which was dropped at Dover by a German aviator on December 24th. It was the first hostile bomb cast from the skies upon this island.

Major Clive Wigram has sent to Lieut.-Commr. Ian Howden, R.N.V.R., commanding the Dover Anti-aircraft Corps, the subjoined acknowledgment: "I am commanded by the King to ask you to accept for yourself and to convey to the officers, petty officers, and men of the Dover Anti-aircraft Corps the expression of his Majesty's best thanks for the fragment of the German bomb dropped on Dover on December 24th, 1914, which relic has been attractively mounted in an engraved frame made by the members of your corps. The King much appreciates the kind thought which prompted the offer of this interesting souvenir, which his Majesty is much pleased to possess."

[It occurs to one that the duty of picking up pieces of German bombs is scarcely so consonant with the objects of the Anti-aircraft Corps as would be the picking up of German aeroplane wreckage produced by the efforts of the said corps.—Ed.]

### Prize for Zeppelin Destroyers.

A prize of £500 is offered by Sir Charles Wakefield to the first person or persons responsible for bringing down a Zeppelin on the soil of the United Kingdom.

Sir Charles Wakefield is the head of the well-known firm manufacturing Wakefield "Castrol," which is so largely and successfully used in all our aero-engines. His sporting offer is sure to cause much interest, and one only hopes that some enterprising person will have the opportunity of winning this prize.

It would perhaps be well if Sir Charles would make a further announcement as to whether the offer refers to Zeppelins only, or whether it includes Schütte-Lanz, Parseval, Gross and other airships as well.

### A German View of Zeppelins.

The following letter to the Editor of the "Morning Post" is of interest:—

Sir,—Recently a German staff officer was captured in one of the trenches taken by us, and on his way to the base was entertained at lunch at the mess of some British officers. A letter from one of them gives the following frank opinion of Zeppelins as expressed by the captured officer:

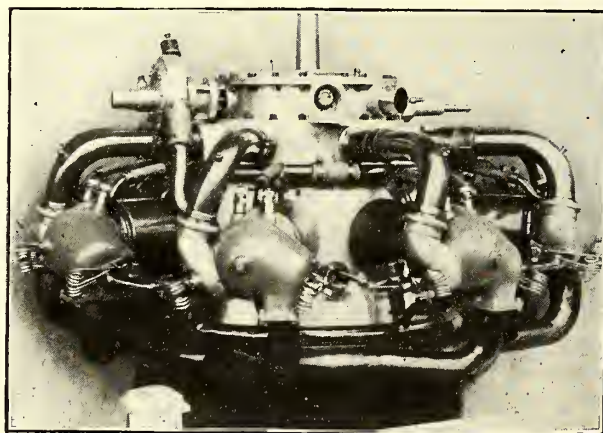
"Old Count Zeppelin," he said, "seems to have magnetised our Emperor, the German people, and very much to his own profit. There is not a naval or military officer of standing in Germany who really believes in them, and before the war we

often used to laugh at the way in which they were 'boomed.' But because the Emperor had set his mind on them nobody dared say what he really thought, and in consequence immense sums which could have been much more appropriately spent were paid for experiments, construction, and for hangars. My own opinion—the opinion of ninety-nine German staff officers out of every hundred—is that they are nothing more or less than a swindle, foisted on our Emperor by a silly old man. Of course, I am speaking only from a military point of view."

—Yours, etc.,

A. C.

[It comforts one to hear that German Staff officers are so like British Staff officers, and do not recognise merit when they see it. Or was the German merely pulling the legs of his hosts? The point that so many people here and in Germany forget is that whereas only 32 or 33 Zeppelins have ever been built at all, these representing perhaps 12 distinct steps in development—allowing for certain machines being exact duplicates of others—there have been thousands upon thousands of aeroplanes built, which represent probably at least five hundred steps in development. That is to say, we are only at the twelfth generation of Zeppelins, and at the 500th generation of aeroplanes—because aeroplanes can be bred more quickly. It will be time enough to jeer at Count Zeppelin when the 500th different Zeppelin is a failure. Disbelief in the present efficacy of the Zeppelin as a weapon is not the same as disbelieving in its future as a vehicle.—Ed.]



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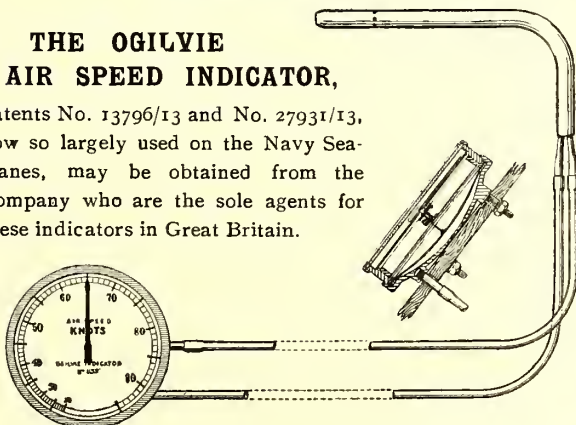
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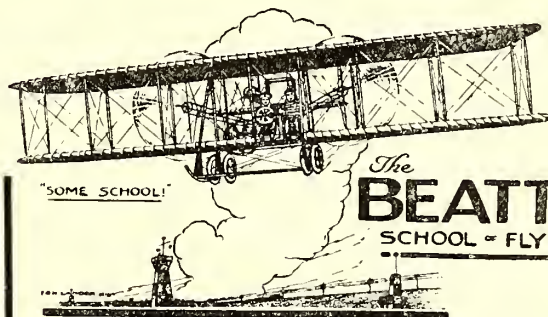
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## Naval and Military Aeronautics.

### GREAT BRITAIN.

From the "London Gazette," February 23rd, 1915.

WAR OFFICE, FEBRUARY 23RD.

REGULAR FORCES.—SUPPLEMENTARY TO REGULAR CORPS. ROYAL FLYING CORPS.—MILITARY WING.—The undermentioned to be second lieutenants (on probation): Jack Oliver Cooper. Dated January 29th, 1915. Harold MacDonnell O'Malley. Dated February 1st, 1915.

\* \* \*

A Second Supplement to the "London Gazette" of February 23rd, published on February 24th, contains the following military appointments:—

WAR OFFICE, FEBRUARY 24TH.

REGULAR FORCES.—The undermentioned non-commissioned officer to be second lieutenant for service in the field:—

INFANTRY.—THE QUEEN'S OWN (ROYAL WEST KENT REGIMENT).—First Class Air Mechanic Arthur F. Quinlan, from Royal Flying Corps. Dated February 10th, 1915.

ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—The undermentioned appointments are made:—

Flying Officers.—Dated February 12th, 1915: Temporary Lieutenant M. L. Braithwaite, Royal Artillery, and Lieutenant W. B. Hargrave, 5th Battalion the Suffolk Regiment, Territorial Force.

The undermentioned temporary appointment is made:—

INSPECTION STAFF.—Captain Bernard C. Smyth-Pigott, the Durham Light Infantry, an assistant inspector, to be inspector. Dated February 27th, 1915.

SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Second Lieutenant (on probation) Richard H. Collier is confirmed in his rank. James Douglas Latta to be second lieutenant (on probation). Dated February 9th, 1915.

\* \* \*

A Third Supplement to the "London Gazette" of February 23rd, published on February 25th, contains the following military appointments:—

WAR OFFICE, FEBRUARY 25TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—The undermentioned appointments are made:—

Adjutant (graded as a Flight Commander)—Captain the Hon. J. D. Boyle, the Rifle Brigade (the Prince Consort's Own). Dated February 3rd, 1915.

Flying Officers to be Flight Commanders. Dated Feb. 16th, 1915: Lieutenant E. N. Fuller, Special Reserve, and to be temporary captain; Second Lieutenant L. A. Strange, the Dorsetshire Regiment, and to be temporary captain; Captain F. B. Binney, Royal Artillery; Captain L. W. B. Rees, Royal Artillery; and Captain J. D. G. Sanders, Royal Artillery.

Flying Officer—Captain J. C. Halahan, Reserve of Officers. Dated February 17th, 1915.

\* \* \*

From the "London Gazette," February 26th, 1915.

ADMIRALTY, FEBRUARY 22ND.

ROYAL NAVAL AIR SERVICE.—The undermentioned acting flight lieutenant has been confirmed in the rank of flight lieutenant: D. C. S. Evill. Dated December 4th, 1914.

The undermentioned probationary flight sub-lieutenants have been confirmed in the rank of flight sub-lieutenant: D. Iron. Dated September 16th, 1914. B. L. Huskisson. Dated September 17th, 1914. K. F. Watson. Dated October 12th, 1914. E. J. Cooper. Dated October 17th, 1914. P. E. H. Wakeley. Dated October 27th, 1914. W. L. Welsh. Dated November 7th, 1914. F. W. Gamwell. Dated November 16th, 1914. H. J. Batchelor. Dated November 25th, 1914.

The undermentioned probationary flight sub-lieutenants for temporary service have been confirmed in the rank of flight sub-lieutenant for temporary service: D. M. Barnes. Dated October 12th, 1914. G. F. Breese. Dated October 30th, 1914.

FEBRUARY 24TH.

ROYAL NAVAL AIR SERVICE.—The following promotions have been made:—

Flight Lieutenants—I. H. W. S. Dalrymple-Clark. C. H.

Collet, D.S.O., R. J. Bone, C. H. K. Edmonds, D.S.O., I. G. V. Fowler, H. M. Cave-Browne-Cave, C. E. Robinson, and J. T. Cull, to be flight commanders. Dated February 23rd, 1915.

Probationary Flight Sub-Lieutenant G. W. Price has been confirmed in the rank of flight sub-lieutenant. Dated October 5th, 1914.

WAR OFFICE, FEBRUARY 26TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—The undermentioned appointment is made:—

Flight Commander—Second Lieutenant (temporary Captain) F. C. Jenkins, Special Reserve, a flying officer. Dated February 17th, 1915.

### NAVAL.

The following appointments were announced at the Admiralty on February 23rd:—

ROYAL NAVAL AIR SERVICE.—Mr. W. H. Greer entered as probationary flight sub-lieutenant, for temporary service, and appointed to the "President," additional, for R.N.A.S., and Mr. G. H. Jackson entered as probationary flight sub-lieutenant and appointed to the "President," additional, for R.N.A.S., to date February 21st.

\* \* \*

The following appointments were announced at the Admiralty on February 24th:—

ROYAL NAVAL AIR SERVICE.—Acting Flight Lieutenant D. C. S. Evill confirmed in rank of flight lieutenant, with seniority December 4th, 1914, and appointed to the "President," additional, for R.N.A.S., to date February 22nd.

The undermentioned confirmed in rank of flight sub-lieutenant for temporary service, and appointed to the "President," additional, for R.N.A.S., all to date February 22nd: G. F. Breese, D. Iron, K. F. Watson, E. J. Cooper, D. M. Barnes, B. L. Huskisson, F. W. Gamwell, W. L. Welsh, H. J. Batchelor, and P. E. H. Wakeley.

Mr. G. St. G. Kelton entered as probationary flight sub-lieutenant, for temporary service, and appointed to the "President," additional, for R.N.A.S., to date February 23rd.

\* \* \*

The following appointments were announced at the Admiralty on February 25th:—

ROYAL NAVAL AIR SERVICE.—The undermentioned flight lieutenants have been promoted to the rank of flight commander, with seniority February 23rd, and appointed to the "President," additional, for Royal Naval Air Service: I. H. Waldegrave S. Dalrymple-Clark, C. H. Collet, D.S.O., R. J. Bone, C. H. K. Edmonds, D.S.O., I. G. V. Fowler, H. M. Cave-Browne-Cave, C. E. Robinson, and J. T. Cull.

Mr. R. B. Monday entered as probationary flight sub-lieutenant, with seniority February 16th, and appointed to the "President," additional, for Royal Naval Air Service.

Probationary Flight Sub-Lieutenant G. W. Price confirmed in the rank of flight sub-lieutenant, with seniority October 5th, 1914, and appointed to the "President," for Royal Naval Air Service, to date February 24th.

\* \* \*

The following appointments were announced at the Admiralty on February 26th:—

Mr. A. Ogilvie has been entered as Squadron Commander, for temporary service, with seniority February 19th, and appointed to the "President," additional, for Royal Naval Air Service, to date February 19th.

Lieutenant Commander H. Finch-Dawson, to the "President," additional, for (N) duties in the Royal Naval Air Service.

\* \* \*

The following appointments were announced at the Admiralty on Mar. 1st:—

Royal Naval Air Service.—Messrs. G. H. Beard (for temp. service) and R. C. Hardstaff have been entered as Probationary Flight Sub-Lieutenants, with seniority of Feb. 27th, and appointed to "President," additional, for R.N. Air Service.

Royal Naval Volunteer Reserve.—H. Thompson has been

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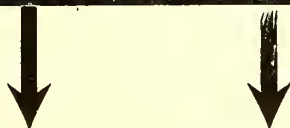
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granted a temp. commission as Lieutenant, with seniority of Feb. 28th, and appointed to "President," additional, for R.N. Air Service.

N. H. Terry has been granted a temp. commission as Sub-Lieutenant, with seniority of Feb. 28th, and appointed to R.N. Air Service.

\* \* \*

The following communiqué was issued by the Admiralty on February 24th:—

The Secretary of the Admiralty regrets to announce that in the recent naval air attacks on the Ostend-Zeebrugge-Bruges districts four flying officers are reported to be missing.

One of these officers—Flight Lieut. D. Murray—has since reported himself from Flushing. Lieut. Murray was compelled to alight in the open sea, and was eventually picked up by a Dutch torpedo-boat.

The three other officers reported missing are Flight Lieut. E. G. Riggall, Flight Lieut. the Hon. D. O'Brien, and Flight Sub-Lieut. T. Spencer, and it is regretted that no further news has been obtained of them.

\* \* \*

Of the three missing officers, Flight Lieut. Edward Gordon Riggall, R.N., was born on Aug. 21st, 1895, at Grimsby, and took his certificate, No. 939, at the Grahame-White school at Hendon, on Oct. 11th, 1914; Flight Lieut. the Hon. Desmond O'Brien, R.N., took his certificate, No. 906, on a Maurice Farman, at the Central Flying School, on September 21st, 1914; and Flight Sub-Lieut. Thomas Spencer, R.N., who was born at Hexham on December 24th, 1894, took his certificate, No. 991, at the Central Flying School, on a Maurice Farman, on October 27th, 1914.

It is earnestly to be hoped that all three officers were merely brought down by gun-fire and were made prisoners, but it is probable that if such had been the case something more would have been heard of them by now. One German report mentioning the attacks on the Belgian coast towns said that some hostile aviators had been brought down in the sea, and some of the pilots who took part in the raid in the course of which these officers disappeared stated that some of the German guns were firing at an object in the water, so it is to be feared that one at least of them was shot while in the sea.

\* \* \*

The following account of young Mr. Murray's adventures is taken verbatim from the "Morning Post":—

One of the British airmen who took part in the attack on the Ostend-Zeebrugge-Bruges district was Flight Lieutenant Murray, son of Professor and Lady Mary Murray, of Oxford. He managed to place all his eight bombs, and did not even get a scratch. He could not get back against the wind, so kept going until he saw a tug, and then turned north-west to try and get out of Dutch waters. He came down fast and then drifted inshore for two hours. Finally he fired a signal of distress and a torpedo boat came out and took him in tow and the crew gave him food and drink. Lieutenant Murray has lodged a protest against being interned, as he claims to have "landed" outside territorial waters and drifted in. Lieutenant Murray, who is only twenty-three years of age, was educated at Winchester and New College, Oxford. He spent two years at Oxford and took up flying two seasons back, when he was trained at Hendon, receiving his appointment last summer as flight lieutenant in the Royal Naval Flying Corps (*sic*).

[According to the Amsterdam "Telegraaf" Flight Lieut. Murray will remain at Groningen on parole. His case, however, seems precisely analogous to that of Flight Commander Hewlett, so, presumably, he is entitled to return to this country. It is to be hoped that the other officers have merely been captured.—Ed.]

\* \* \*

The Secretary of the Admiralty made the following announcement on Mar 1st:—

The operations in the Dardanelles are again delayed by unfavourable weather.

A strong north-easterly gale is blowing, with rain and mist, which would render long-range fire and aeroplane observation difficult.

An inquest was held at the Central Flying School, Upavon, Salisbury Plain, on February 23th, on Lieutenant Dawson C. Downing, R.N., who was killed in a B.E. biplane near the school about midday on Thursday.

Capt. Godfrey Paine, C.B., R.N., Commandant C.F.S., said that Mr. Downing was twenty-five years of age, and had been at the Flying School since December. He took his Aero Club certificate in January. He had done a considerable amount of flying, and was experienced with the B.E. machine.

Flight Commander Dalrymple-Clark, R.N., said he ordered Mr. Downing to make circuits of the aerodrome, landing each time. The first landing was normal. At the end of the second the machine came down very fast, developing a vertical nose dive from a height of 300 feet, and was wrecked. Lieut. Downing was found in the middle of the wreckage dead. The day was ideal for flying. There was practically no wind. The witness's opinion was that Lieut. Downing lost control. He had, however, the confidence necessary in an aviator. The fatal turn which he made was steep, but all right so long as it was not allowed to get steeper. The witness examined the machine after the accident and found the controls in perfect order. Mr. Downing was not sufficiently advanced to take a passenger.

Flight Commander Breese, R.N., agreed that the machine was in order; only one wire was damaged, and that was duplicated.

Capt. Lithgow, R.A.M.C., having given evidence, the jury found a verdict of accidental death.

Lieut. D. C. Downing, R.N., was born in London on October 16th, 1889, and joined the Central Flying School, on probation for the Naval Air Service, at the end of last year. He took his certificate, No. 1034, on a Maurice Farman, at the Central Flying School, on January 6th of this year. The cause of the accident was apparently a nose dive similar to that in which the late Mr. H. Fleming was killed.

\* \* \*

A report was received at Colchester early on the night of February 23rd that seven enemy aircraft has been seen about 4.30 on the previous afternoon over the Maplin Sands, heading for the north-west.

[It appears that it may soon be necessary to forbid gulls (human and otherwise) from frequenting the coast on account of the anxiety they create.—Ed.]

\* \* \*

The Royal Naval Air Service may be entertained to know how much their doings interest the public. The following dialogue was overheard by a correspondent recently:—

Scene, a barber's shop.—Barber (to Customer): "I hear we are quite ready for the Germans now."

Customer: "How's that?"

Barber: "Why, at Hendon we have 150 aeroplanes ready to start at any moment, day or night, with the pilots on sentry go, as it were, round their machines."

\* \* \*

A correspondent writes:—"There is a great amount of flying going on here daily, and in some cases nightly. One of the Naval pilots went up the other night at 11.30 p.m. and circled over part of our district, starting numerous Zeppelin scares thereby. Why the R.N.A.S. should be in charge here I cannot think, as the aerodrome is — miles from the sea and none of the 'buses are seaplanes. It appears more of an R.F.C. job to me. The aeroplanes are kept in —'s factory, which, by the way, has just more than doubled its extent, and, under Mr. —'s care, has been turning out —'s very busily.

"The 'buses flown at present appear to be two Bristol tractor biplanes with 80-h.p. Gnomses and a new H. Farman (just arrived) 'pusher' biplane. Who the Naval flight lieutenants are I don't know, but they fly extraordinarily well, one in particular always terminating in a beautiful spiral *vol-piqué* from whatever height he may be flying, often over 5,000 feet. They sometimes fly slightly over the sea, but take no risks as they are not fitted with floats, and even if they were our — sea is seldom calm enough for a landing these days. The wind does not stop them going up at all, and mind, we do get winds here! It is a great sight to see one at about 5,000 feet or over as



steady as a rock, but only doing about 10 m.p.h. against a stiff North-Easter.

"Earlier on in the war we had B. C. — and others here, all on Blériots, training for active service; now we never see a monoplane. The war has certainly wakened up — side as regards flying, and you can see three up at once now almost daily, where before we saw an aeroplane once in three months at most. May we never go back to the old days!"

Mr. Alec Ogilvie, who joins the R.N.A.S. as a squadron commander, the highest rank ever given to a direct appointment officer, is one of the great pioneers of British aviation. He began flying on a Wright biplane at the Short Bros.' old ground at Leysdown, in 1900, and he has flown regularly ever since, always on Wrights of various types, and generally of his own construction. He has devoted practically all his time and his not inconsiderable fortune to steady, practical experimental work, which has been of the utmost value, and some of his own inventions, such as the Ogilvie air-speed indicator, are now standard fittings on almost all aeroplanes. At Eastchurch his shed and his machines have been practically a full-size aerodynamic laboratory. His appointment will be heartily approved by all who know the value of his work in the past.

\* \* \*

Mr. R. C. Hardstaff appointed Flight Sub-Lieut., R.N.A.S., on probation, has already done much good work as assistant instructor to Mr. F. B. Fowler at Eastbourne.

\* \* \*

On Saturday, February 27th, two German officers were landed at Lowestoft by the smack, "New Boy," which took them off a damaged seaplane in the North Sea on the previous Tuesday. They left Ostend on the Sunday, but their engine failed when out at sea, and they were found clinging to one of the wings of the plane. In this perilous position they said they had been for some thirty hours and they were quite exhausted and almost unconscious. It is stated that they made distress signals during Sunday night, to which, however, they got no response.

The two aviators were curious as to their fate when taken on board, but were assured they would be well treated. It is reported that at first they asked to be landed at some foreign port, and that they destroyed sundry papers they had upon them.

It appears that they started with the raiders who reached Colchester, Braintree, and Coggeshall on that Sunday, but a connecting rod smashed when they were 40 miles from Cromer. One account states that they climbed on to one of the wings, and awaited what appeared to be certain death, for their signals brought no help for a day and a half, and only their heads were above water. They became so benumbed that they could not move, and a snowstorm on Monday nearly finished them. This, however, does not altogether agree with the story of the skipper of the smack, from which one would gather that they must have sat in the machine itself, otherwise they would not have been able to send up rockets. Even so they displayed splendid endurance, though when rescued one of them was on the point of collapse. That they should have survived so long is testimony to that wonderful staying power of the Germans, of which this paper has so often warned its readers, when the daily press has been jeering at the alleged readiness of German soldiers to surrender.

Both officers are young men about twenty-five or twenty-six. One is stated to have said that when they left Ostend they were only instructed to make for a place somewhere in England suitable for an air raid.

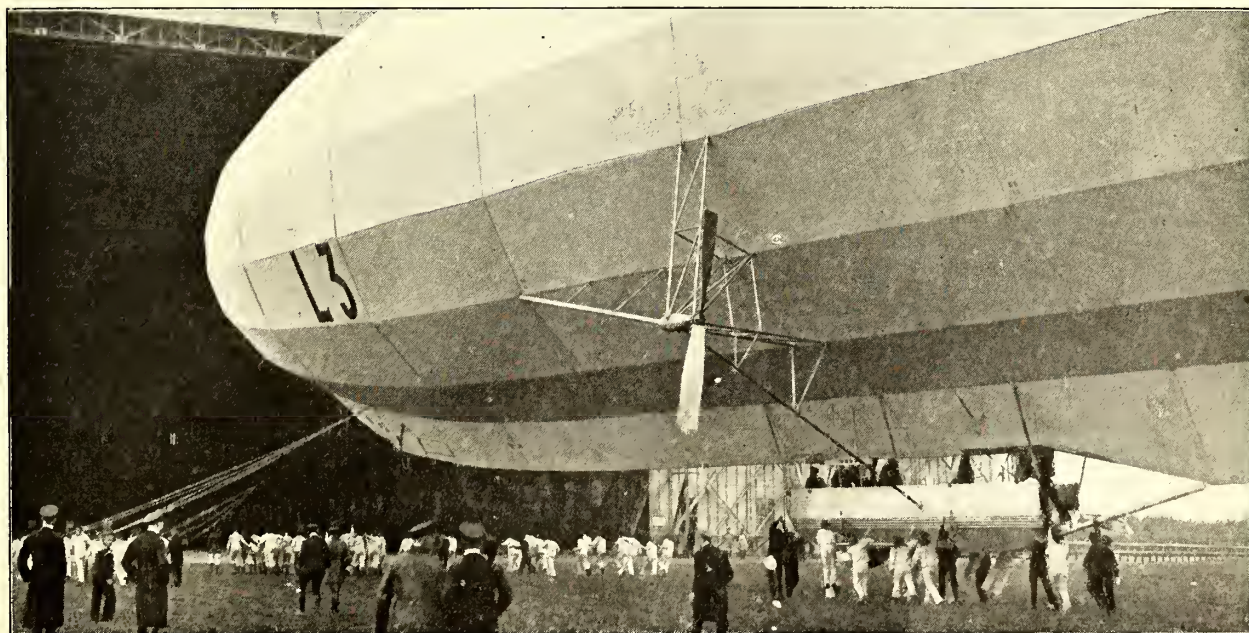
They were very grateful for their treatment on the smack—which was apparently different from what they expected at the hands of Englishmen. Having been interviewed by the authorities at the Naval base they were taken to the Royal Hotel, and subsequently removed by car to be interned.

An account of the rescue was given by William Dunnett, the captain of the "New Boy," who said that about 4 a.m. on Tuesday, when it was very cold, they saw a rocket, and, hoisting sail, made for the spot. The wind was light and it was nearly 9 a.m. before they reached the wreck of the aeroplane, to which the two men were clinging. One of the floats was broken off and a wing was flapping on the water. Launching the small boat, they took off the men. When on board the smack one of them asked the captain what he was going to do with them, and he replied: "Oh, you will be all right. I am going to take you to Lowestoft." They soon recovered from the effects of their exposure.

#### MILITARY.

The Field-Marshal Commanding the British Forces in France, in his dispatch dated February 22nd, and published by the Press Bureau on February 23rd, says, in paragraph 5:—

Thick weather has handicapped the work of our aircraft.



The famous Zeppelin L. 3, which has recently gone home for good off the Danish coast, is here seen entering her former home near Hamburg.



His dispatch published on Feb. 26th says, in paragraph (1):

The period, since the last communiqué was issued, has been marked by thick mist and rain which culminated on the 24th in a heavy snow storm. Operations have consequently been hindered.

The following passage in the descriptive account communicated by an Eye-witness present with General Headquarters, continuing and supplementing the narrative published on the 24th instant, deals with aircraft:—

FEBRUARY 23RD.

Several villages in the centre were heavily shelled during the day (the 19th), but in the afternoon the German guns ceased firing owing to the fear of revealing their positions to our aviators, who kept the whole hostile line under observation.

An officer writes:—The other day we were all about our daily business, when we heard the sound of shots skywards. Now, sound of shell skyward is very common, as on any fine day one aeroplane or another is being shelled, and no one worries much about it. Shots mean a chance of something being hit, and is, therefore, exciting, while anti-aircraft shells are only exciting from the fact that they are more likely to hit you than the aeroplane.

Two aeroplanes were coming towards us, flying, I think, a little lower than usual. The pursued was a small monoplane, and the pursuer a very much larger biplane, and to our joy German and English respectively. I always thought a biplane was, as a rule, much slower than a monoplane, but the two seemed identical in speed. The German appeared to be about 100 yards at most from the English, judged by comparison of space between them and the length of the aeroplane. The 100 yards, as regards direction, was varying continually. The English aeroplane could only catch up the German by descending a bit, and if it tried to climb at all it lost distance horizontally.

So we watched them going ding-dong at each other in a straight line for about 10 miles, when they disappeared in the haze, with the pursuer trying first one side, then the other, and then behind, but never over (I suppose because he could not get there, worse luck!). Each, as far as we could see or hear, blazed away with revolvers only, and it seemed rather amusing that by fighting so desperately to get each other down they were each, incidentally, doing their best to keep each other up, as neither English nor German anti-aircraft guns, though nicely within range, dared blaze away at them. They disappeared well over the German lines, as close after 10 miles of chase as they were after one. The result was, I believe, officially nil, but actually it gave a lot of excitement to many thousand onlookers.

An N.C.O. of the R.A.M.C. (1.), writing from France on or about February 18th, says: "The weather has not been so fine during the last few days, so we have not had quite so many aeroplanes about. However, they always seem to be busy, and though one does not see many German machines, they occasionally pay us a visit. The other afternoon an Albatros came over, flying quite low, something under 2,000 feet, and she was absolutely blazed at by all sorts of fire for about a quarter of an hour. She kept going, however, and as far as I know was not once hit, and got away.

"I always have a sort of fellow feeling for these German chaps who come over on our lines, and an inward hope that they may come through all right. One also feels that the men behind the anti-aircraft guns must have similar sympathies, but I suppose it is not the case. However, I have never seen a machine, English or German, hit yet, and the chief object of 'Archibald' (the anti-aircraft gun), seems to be to drive the hostile 'bus away by showing what he could do if the said hostile 'bus comes any nearer. Besides 'Archibald' we have got a very neat little machine-gun mounted on a car, which, when possible, runs along the road in pursuit of the invader with the gun popping away like an ancient Anzani engine.

"One hesitates to think what would happen if the driver's gaze became so transfixed on the prey that he failed to notice the neat eleven-foot 'Jack Johnson' hole in the road in front

(jubilation of hostile airman and passenger!). I saw a couple of R.F.C. officers in a car the other day. They looked 'in the pink.' "

\* \* \*

Later he writes:—Lively duel yesterday between Shorthorn Maurice Farman and Aviatik. The M. F. seemed to be all over the German for speed, as it flew along parallel and kept edging in towards the German, firing, and then edging away again. It attacked in this way four times with no result except to drive the boche away out of his course, and then matters were left to Archibald and the little machine gun. He got away, however, although some of Archibald's looked uncomfortably near.

Also saw two Parseval kite-balloons yesterday. Naturally most people thought they were at last gazing on the much-awaited but elusive Zeppelins!

\* \* \*

A non-military correspondent writes:—"I saw rather a funny incident yesterday. A B.E. had rather suddenly 'discontinued' while rolling and had completely demolished the undercarriage, buried its nose about a foot in the ground and its tail was sticking up in the air. A colonel (presumably a 'dug-out') and a brig.-gen. (not *the* one) came along and regarded the wreck, and then the colonel, with an awed voice, said: 'Has there been an accident?' He then turned to the general and said: 'Very dangerous coming down in those things, isn't it?' 'Yes,' said the general, with a wink, 'they'd stay up there permanently once they got there, only it's been found so difficult to take food up to them!' The colonel even then didn't appear to see his leg was being pulled."

### FRANCE.

The official communiqué issued in Paris on the afternoon of February 25th says:—

Our airmen threw 60 bombs on the enemy's stations, trains, and concentrations. It was possible to follow the results of this bombardment, which was extremely effective.

\* \* \*

The official communiqué issued in Paris on the afternoon of February 28th reports as follows:—

Near Dixmude the Belgian artillery demolished two of the enemy's works, and one of their aviators dropped some bombs on the harbour station at Ostend.

An official note published in Paris on February 27th says:

German aeroplanes dropped bombs on the Belgian coast behind Nieuport, killing a woman and an old man. In the Woevre a German aviator who attempted to pass over our lines was driven back by our fire.

A French aviator succeeded in dropping three bombs on the barracks at Metz, near the esplanade.

\* \* \*

On February 25th the Paris "Figaro" published a letter from the Marquis d'Ornano offering £200 to the first person to bring down a Zeppelin on French soil.

\* \* \*

The Nancy correspondent of the "Matin" learns from Baccarat that a German aeroplane, which was flying over the Lunéville district on the 25th, was brought down by French artillery. The aviators were made prisoners.

\* \* \*

News has been received in Belfort from Mülhausen that the French aviators who bombarded Freiburg in Breisgau on their return dropped bombs on the barracks at Mülhausen.

\* \* \*

The death is announced of two Flemish aviators, brothers, aged 20 and 19. They had recently returned from the front, where they had done good work. At Buc on the 24th they were trying a new machine when they were killed.

\* \* \*

A message from St. Pol, dated February 24th, says:—"Yesterday a German aeroplane which flew over our lines was brought down by a shell at Noëux. The pilot was taken prisoner.

"This morning, at about 7 a.m., our aeroplanes, taking advantage of clear weather, flew over the German lines near La Bassée, and located six batteries, which a few minutes later were shelled by our heavy artillery. At the same time snow began to fall."

**GERMANY.**

Berlin, Monday, Mar. 1.

Main headquarters reports this afternoon as follows:—

In the Western theatre of war.—Near Verviers, north of Lille, an English flying machine was forced to descend by our fire at a certain part of our front.

**ITALY.**

The Italian War Office has granted permission for the exportation to the French Government of a "few examples" of the Caproni 300-h.p. gun-carrier. What remains of the late Triple Alliance will shortly, it is to be hoped, know something more definite as to this biplane's harmfulness when roused. One can no longer wonder at the mystery—of a cloister it might have been—in which the machine lived and had its being.

The new G (great) dirigible No. 1 is much more forward than anyone hoped, and the reconstruction of the burnt Forlanini may be accomplished by late spring. Much of the "City of Milan" was saved, and is being used.—T. S. HARVEY.

**RUSSIA.**

The "Daily Express," of March 1st, says that "The new Russian airship, 'Gigant,' which is said to be larger than any Zeppelin, has begun its trials."

**DENMARK.**

A message from the inventive Reuter correspondent at Copenhagen, dated February 23rd, says that the authorities at Esbjerg have decided to melt down the aluminium of the Zeppelin, L.III, after removing the motors. The weight of the aluminium is estimated at 7,000 kilos (over 15,000 lb.).

[The interesting question is whether this treasure trove belongs to Denmark at all. Presumably, what is left in any country of a wrecked ship of any kind, after the local peasantry have stolen all they can lift, belongs to the original owners, unless they are subjects of a hostile nation.—Ed.]

**SWITZERLAND.**

The correspondent of the "Daily Chronicle" at Geneva, cabling on February 24th, says that on the previous day a German aviator flew over Beunevesin, near Bonfol, and was fired at by Swiss infantry. He was also fired upon by the French troops at Pelterhouse, but returned safely to Mulhouse.

**HOLLAND.**

According to the Amsterdam "Telegraaf," a large biplane of unknown nationality passed over Amsterdam early on February 23rd. At first it appeared to be about to descend, but finally disappeared in the mist in a south-easterly direction.

**BELGIUM.**

The "Tyd," of Amsterdam, stated on February 24th that a British aviator made an attack on three German aeroplanes on

the route from Thourout to Ostend. The former used bombs, and two of the German machines were completely destroyed, whilst both wings of the third machine were broken. Seven German officers were killed.—[It would seem that, under the circumstances, the third machine might also be considered as "completely destroyed."—Ed.]

**TURKEY.**

The Mitylene correspondent of the "Corriere d'Italia" states that the Allied fleet of twelve cruisers and 20 destroyers renewed the bombardment of the Dardanelles on February 25th. Before firing began three seaplanes flew over the forts, at a height given as only 3,000 feet, and dropped bombs, which caused fires.

The Athens correspondent of the "Messaggero" states that British aviators made extended flights over the Dardanelles on Friday, and were able to ascertain that the fort of Seid-ul-Bahr had been destroyed by the blowing up of the powder magazines, while the forts of Artogrul and Sultanieh had been almost destroyed, no gun remaining fit for service.

**EGYPT.**

It is reported from Egypt that the British passenger on the French seaplane which recently threw bombs on a Turkish column and inflicted serious loss was Mr. Tweedie, a son of the P. and O. agent at Port Said.

A naval officer who was wounded in the attack on the Suez Canal, writing before the fight, describes what he calls the "amusing times" he was enjoying:—

"I held a post with 20 Gurkhas. They are splendid little men and frightfully keen. Two days ago an aeroplane reported three battalions of Turks advancing to attack our post. The Gurkhas were frightfully excited, and we manned our air guns and crouched behind our zaribas of sand bags on deck, palpitating with excitement. These night attacks beat tiger stalking easily for pure excitement. However, the attack never came.

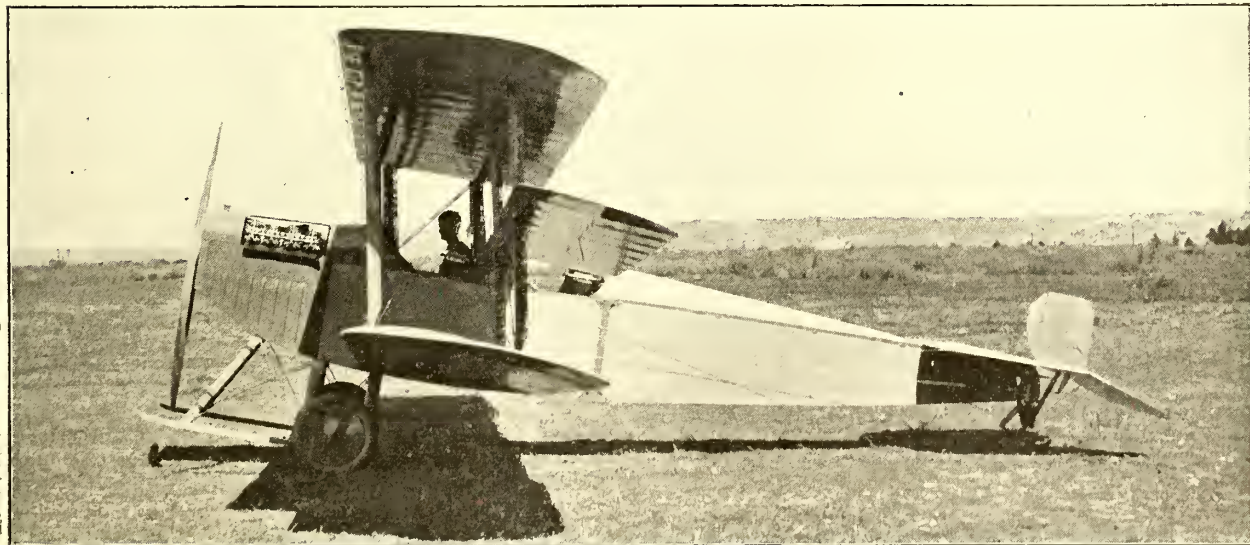
"Our aviators have done good work with their bombs lately. One dropped a bomb into a regiment of Turks in close formation, and when asked how many he had killed replied: 'The maximum number that the bomb possibly could.'"

**SOUTH AFRICA.**

The "Cape Times" of Saturday, February 6th, states that an aviation unit of the Active Citizen Force has been established, and is to be called the South African Aviation Corps.

**GERMAN SOUTH-WEST AFRICA.**

A Reuter telegram from Garub (German South-West Africa) says that an aeroplane appeared over the camp on February 24th, and dropped several grenades and four shells. None of



The "Model N" Curtiss Biplane, 90 h.p.-Type O.X. Motor. It was on a machine of this type that Capt. Muller made his notable altitude flight late last year. The speed range is 85 to 40 m.p.h.



the grenades did any damage, but three shells burst in the hospital lines, and a fourth burst among a knot of men, wounding one officer and five men.

#### INDIA.

A roundabout statement from Reuter's Paris correspondent says that Mr. Pearce, Australian Commonwealth Minister of Defence, states that at the request of the Indian Government the Commonwealth is sending to India aviators and equipment for active service. India is supplying the aeroplanes.

#### CANADA.

The "Globe" (D.), Toronto, Wednesday, February 3rd, says that Capt. E. L. Janney, a Canadian aviator, who has made a name for himself both before and during the present war, has returned from the front on the steamer, "Zeeland," which arrived this morning. He has been doing scout duty for the British Army during the last few weeks. He is now returning to organise a squadron of aeroplanes to be built, equipped, and manned in Canada.

[There is no officer of this name in the R.F.C.—Ed.]

The "Manitoba Free Press" says that 12 Canadians are wanted by the War Office (Br.) to be trained as aviators. (Presumably, they are to be taken from the contingent at Salisbury.)

#### U. S. A.

In the controversy between the U.S.A. and Germany as to whether hydro-aeroplanes should be supplied by America to the Allies, Count Bernstorff states in his letter to Secretary Bryan that "England has ordered 12 hydro-aeroplanes of the Curtiss K model type of 160-h.p. Russia has ordered a number of Curtiss K type hydro-aeroplanes. How many is not yet known. Wings for the aeroplanes are made at the Curtiss plant, minor parts by the Autocrat Manufacturing Co. Motors are built partly by Curtiss himself, and partly by the Herschell, Shillmin Motor Factory, and the Tonawando Boat Co. furnishes the boat part."

[If the German Ambassador knows all this, presumably, England may know also.—Ed.]

The "Globe," Toronto, February 3rd, learned from New York, February 2nd, that in aviation circles there was a stir when it became known that an order for 50 aeroplanes for use of the Italian Government had been received in a cable message addressed to a business man well known in the aeronautical industry. W. E. Doherty left on February 1st for Italy aboard the "Duca Degli Abruzzi," of the Italian General Navigation Line, and it was reported on good authority that he would take a place in the Italian aerial service. Mr. Doherty is one of the best pilots of the flying boat and hydroplane in this country.

From the "New York Tribune," February 3rd, 1915:—

"British troops have shot twenty of their best aviators out of the air by mistake." That is the startling statement made last night by Thomas R. Macmechan, president of the Aeronautical Society of America, before thirty of the delegates to the First Aviation Congress, which opened yesterday in the Engineering Societies Building, 29, West 39th Street.

Mr. Macmechan returned on Thursday from England, where he has been engaged in the construction of aircraft for the British Government.

Referring to the shooting of British fliers, the speaker said that the news had been kept secret, but had been told him by the head of a department and that it is a fact.

Other statements made by Mr. Macmechan indicated the possibility of an important raid by British aviators over Germany. He hinted at the likelihood of twenty or thirty machines flying at once to points far inland, with the object of wrecking the enemy's craft.

The new plan of the British for defending themselves against Zeppelins and aeroplanes, he said, was to meet the invaders before they reached the coast, and thus avoid having the missiles fired by the enemy fall upon their own forces or citizens.

[Without wishing to be rude to this Mr. Macmechan, one can, in Shakespearean language, "write him down an ass." Two of our aviators, in one machine, were unhappily brought down and killed by mistake, and certainly some of our aviators have been fired at by our own and French troops, but there have

not been more than two or three cases in which they have been brought down through damage to their machines, and in no case have they been wounded or injured.

Curiously enough, Mr. Macmechan is not known in the British aeroplane industry or in British aeronautical circles, which seems strange for an American bearing the elaborate title of "President of the Aeronautical Society of America." —Ed.]

#### AUSTRIA.

Telegrams to the Paris newspapers from Rome of Friday's date state that one of the two Zeppelins at Pola during a flight was carried away by a violent storm, and the crew were drowned in the Adriatic.

### The Insurance of Aviators.

A gentleman connected with aviation, though not himself in either Service, writes feelingly as follows:—

"There is a point in connection with officers temporarily joining both the Royal Flying Corps and the Royal Naval Air Service which I feel strongly merits discussion in the pages of *THE AEROPLANE*. The matter to which I refer is one which to my personal knowledge has several times caused very real hardship, that is the unfair way in which insurance companies extract very heavily inflated premiums from those who are joining this branch of the King's Forces.

"Surely in view of the great work being done by the Air Services, and the, after all, small percentage of officers that they embody, it is most unfair that insurance companies should seize this opportunity of extracting altogether disproportionate premiums as they do, especially as the risk actually is probably infinitesimal compared with that of the ordinary infantry officer. It always appears to me that the State could very easily guarantee the insurance companies against undue loss, and then insist on their charging a reasonable figure to effect insurance.

"As you are probably aware, many of those now in the Flying Corps have been by nature somewhat sportive, and certain of them may have incurred liabilities which have necessitated what I believe are called 'inroads upon capital,' generally arranged by loans through the insurance companies. It is, therefore, compulsory on them to keep their lives insured, and at the premiums now being demanded their patriotism is costing them very highly.

"It has struck me that this might be worth bringing up in your pages."

[The subject is one well worthy of consideration by the authorities, and apart from any question of compulsion one feels sure that any insurance company tackling the subject in a somewhat generous spirit would inevitably reap a rich reward when the war is over.—Ed.]

### Mutual Sympathy.

The Danish correspondent of *THE AEROPLANE* writes, as indicating the general sympathy of Denmark, that the most popular song among the Danish soldiers is a Danish version of "Tipperary," the chorus of which runs as follows:—

"Der er lang Vej til Tipperary,  
"Der er lang Vej at gaa,  
"Der er lang Vej til Tipperary,  
"Til den sdeste jeg saa,  
"Farvel Piccadilly, God Nat Leicester Square,  
"Der er lang, lang Vej til Tipperary,  
"Men min Kærest er der."

Incidentally, he says that the Danish soldiers frequently use the name of a Danish city called Tappernøje in preference to Tipperary—which, after all, is rather natural.

### Southampton and District.

The Sopwith Sunbeam-engined tractors have been busy in charge of Mr. Mahl during the week. On Tuesday a new Sopwith-Sunbeam tractor arrived for test, and a very good flight was made on Friday at dusk by a Wight seaplane at good height, showing itself quick in answering its control. Another type of machine which seems to be particularly good is the Maurice Farman, on which machine much flying is done. Many machines have been out periodically, including Sopwiths, Wights, Avros, and a various assortment of others.

**The Thomas Military Tractor Biplane.**

An interesting product of the past few months is the military tractor biplane produced by the Thomas Bros., of Ithaca, New York. This machine has been designed specially for military purposes to supply the demand for a well-built, speedy and safe two-passenger machine, having a large speed range, and capable of flying with ample reserve when carrying two people, gasoline, oil, etc., for a flight of from four to six hours, with an additional useful load of 450 lbs.

The length over all is 26 ft.; the span, 36 ft.; the chord, 5 ft.; and the gap, 5 ft. The wings are built in five sections. The four large sections comprise, practically, the entire lifting surface of the machine. The small section fits over the fuselage.

The wing curve is designed from data obtained from M. Eiffel's experiments, and is selected so as to have not only an extremely high lift to drift ratio (1 in 20), but is also intended to give fast climbing with full load (4,000 ft. in 10 minutes; 800 ft. in first minute). The high speed fully loaded is given as 85 miles per hour, the low speed 38 miles per hour.

All the wood in the wings is clear silver spruce; and all beams, ribs, etc., are of the lightest sections possible consistent with the strength required in each member. All ribs are built up in such a way as to assure their perfect alignment, and are proof against warping and also weakening, due to exposure and weather conditions.

**Navigating Instruments.**

In front of the pilot's seat is fitted a substantial mahogany dashboard, having the following standard equipment of instruments, let in flush; gasoline pressure gauge; revolution counter (Tel Manufacture), showing engine speed; inclinometer, showing angle of flight; clock; barograph, showing height; pilot tube, air speed indicator; switch; gasoline shut-off; and magneto advance.

The seats are of aluminium bucket type, and are fitted with a 3 inch curled hair cushion, upholstered in a serviceable gray corduroy. The position is comfortable, an item not to be neglected on a four or five hours' flight.

The 90-h.p. Austro-Daimler engine was adopted by the designers on account of its extreme reliability and all-round efficiency. The workmanship is excellent, and in every particular this engine has been found to meet the requirements for a comparatively light but powerful heavy-duty power plant, and, therefore, for British use, this engine, of Beardmore make, can be fitted with ease.

A Thomas propeller is used, specially designed for the Austro-Daimler motor. It is made of mahogany, and, as in the balance of the machine, the factor of safety is 7.

All fittings are made specially for their places, and such articles as turnbuckles, eyebolts, etc., are of the latest and most accepted design and quality. All bolts, clips, etc., are made of high tensile steels.

The fabric is a high grade, imported Irish linen; it is sewn

on to the machine, and is then treated with from five to nine coats of special "dope."

The factor of safety on this machine is "seven" for the machine fully loaded, in normal flight.

The wires are of ample strength, and are of Roebling manufacture, the most important ones being stranded steel cable, and doubled for safety. In the fuselage and in some of the minor bracing Roebling nickel-plated steel wire is used. Each wire joint is designed so as to have slightly greater strength than the wire itself.

Accessibility and quick assembly have been carefully catered for in this design, and it will be found that each part is easily accessible; and such parts as strut connections and wing fastenings can be very quickly assembled or taken down.

**Interior Care.**

All interior wooden parts are treated with a waterproofing solution, and all exterior parts are filled and varnished with a high grade spar varnish. Metal fittings are given a coat of metal primer and two coats of colour varnish.

The weight of the machine, empty, is 1,075 lbs.

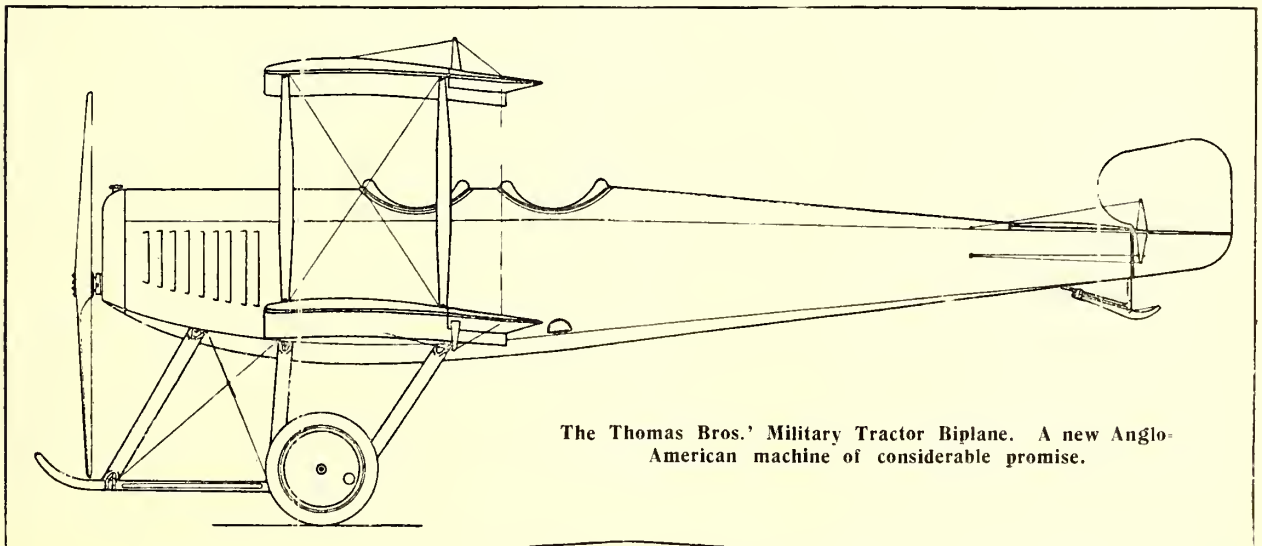
The fuselage is made largely of white ash. All longitudinal members are I section, and tapered for lightness. All clips are of steel, and are so designed that they do not pierce the longitudinal members.

The chassis is of the two-skid, two-wheel type, having two 26 in. by 4 in. wheels, and specially made Goodyear tyres, mounted on a transverse axle on rubber shock absorbers. All running gear members are of streamline section, also the axle is streamlined by a channelled member joining the skids.

The power plant is completely enclosed, having the radiator immediately in front of the engine, and a light weight aluminium folding hood effectively shielding the engine, and preserving the streamline form of the fuselage. A service petrol tank is mounted in front of the passenger's seat, and a storage tank, holding 20 gallons, is fitted under the pilot's seat, and, through a pressure pump, supplies the service tank.

The elevator is operated by pull and push on steering wheel, on a substantial pivoted post. The movement is conveyed to two sturdy, all-steel flaps, hinged to the stabiliser. The rudder is operated by rotation of the wheel, the stress members are of steel, and the rudder is balanced. The ailerons are four in number. They are operated by a leaning, shoulder bow, or, as an alternative, by foot pedals, mounted in the front of the pilot's compartment. All the controls are very strongly constructed, the stressed members being of steel construction, with all joints wrapped and brazed; they are of ample size to take care of their requirements. The standard wheel and rudder-bar can be fitted if desired.

In conclusion, attention is drawn to the fact that, in the production of the machine above specified, the manufacturers have spared no expense or pains in any particular, and regard the product as the best that modern design and constructive ability permit.



**The Thomas Bros.' Military Tractor Biplane. A new Anglo-American machine of considerable promise.**



## NEWS FROM DENMARK.

From sources not controllable, "Flugsport" reports news of Tryggve Gran's guard service of the Norwegian neutrality; they may refer to some time back, as some weeks ago a Copenhagen newspaper announced Gran to have started for England and France as their war correspondent; no articles have however been published of his till now; so he may well have resumed his voluntary air service, and anyhow the interesting report is worth rendering. From a strip of sand, which is the only place of the whole Norway mountain coast which can be used safe for starting and alighting by an aeroplane, Lieutenant Gran flies along the coast in all sorts of weather to patrol for submarines and other little men-of-war, while he does not care much of the question whether they are English or German vessels. It is sufficient to him and his observator to substantiate a foreign man-of-war within the prohibited frontier of 5 kilometers off the Norwegian coast. Then the aeroplane plunges at once on the vessel, polite but distinct, ordering the captain to seek less neutral waters. His task is no idle one, for since the first days of the war the Norwegian bays and inlets were very attractive to foreign vessels of all sorts. Over and over again the keen and small advanced guards of the warfaring countries entered these neutral waters to get a respite and to recover before starting again the search for booty. Thus 50 submarines belonging to one nation alone have been observed by the vigilant Norwegian naval aviator at various times of the war. The picture of the situation is that the submarine is lying in the surface, with open hatchways, in the smooth and protected bay, while the crew is refreshing in the pure safe air by the Norwegian coast. When suddenly a two-seater Blériot monoplane appears from the blue sky or from amidst the fog, with the Norwegian colour waving from the tail and others painted distinct at the underside of the planes. In a "vol piqué" that brings him almost down on the dancing seas the guardian from the air greets. "You cannot stay here, captain," he looks to say, "you must leave the Norwegian waters, or I must use myself of sharper means!" The sign gets understood, the hatchways are closed quick, the submarine dives, and in a minute only the dark figure can be seen below the surface on the way out to the open sea. And whenever the guards placed at various points of the Norwegian coast observe anything special, Lieutenant Gran is informed so as to try the case in his aeroplane.

One day he staid at his quarter to repose, when he received a wire from one of the guards; in an automobile he drove quick to the coast, and started on his monoplane. Soon he discovered a famous submarine at rest, but the engine noise sufficed; in a minute the submarine had disappeared beneath the surface, and next day was learned that three big cruisers had been sunk. In all, Lieutenant Tryggve Gran has flown 3,000 kilometers over sea, and has even made a record flight (already mentioned in THE AEROPLANE), covering 700 kilometers on a flight out on open sea and back with a passenger.

Apparently the whole crew of the airship "Schütte-Lanz II" has been granted the Iron Cross in reward of valuable information from patrol flights of the movements of the English North Sea Fleet, even enabling that submarine to torpedo "Cressy," "Aboukir," and "Hogue."

Oberbefehlshaber General v. Kluck speaks thus of a fight in the air: The assembled officers got animated by a just arrived telegram, which told of the promotion of a Vizefeldwebel to a flight-officer; this fortunate fellow was already sleeping after his hard day's work, but he was quick awaked, brought back and toasted. He is a little young man with horn-rimmed spectacles, more alike a teacher than a pilot officer, and wears the name of Flashar. The young aviator reported common practise among the aviators, when returning in the evening with the ordered observation for the headquarter and a hostile aviator was met, then when being at the distant to do the officer's greeting. The importance of delivering the report in due time was in most cases stronger than the desire of having a fight. Thus he had himself met with a hostile aviator recently and greeted, but when his observator turned a little later, the pursuing Blériot monoplane had gained within a short distance. Now all depended of quick and nimble hand-

ling to get out of the enemy's range and self to try to get the gunshot. He, Flashar, must only care of his own aeroplane, without being able of regarding the hostile aeroplane, where a machine gun was now used hard. When suddenly the carbine of his observator Demuth appeared along his cheek, so that he knew to have manœuvred right; a shot was fired, and when he now turned, he noticed the enemy descend in a vol piqué; Demuth had shot him down.

This case was not considered an aerial exploit, as can be learned from the stamped copy of an Army order from his Excellency von Kluck: "As has been found out for sure now Lieutenant Demuth has, on November 5th, in a flight with Lieutenant Flashar as the aviator, of the Feldflieger department 33, in a fight in the air shot a hostile aeroplane down. I thank and acknowledge Lieutenants Flashar and Demuth to the result.—Der Oberbefehlshaber: von Kluck."

## The R.N.A.S. Comforts Fund.

Readers who have subscribed to the Fund now being raised by Mrs. Sueter may be interested to know that 9,932 garments have already been sent in 95 cases and bales to the different Air Stations in England and abroad, and to the R.N. seaplane-carrying ships. The greatest care is being exercised that the right kind and correct number of garments are sent to each Station.

Equipment for a hypothetical number of men is not forwarded to any given place. Mrs. Sueter, in the first place, sends the O.C. a requisition form to fill up, stating specifically how many vests, helmets, shirts, etc., his men are in need of. This arrangement causes considerably more trouble, but it ensures that not a single garment will be wasted.

Special thanks are due to Mrs. Heatly, who has sent 24 beautiful hand-made fishermen's jerseys, also to the Navy League at Glasgow, to Lady Henderson, Mrs. Balfour, the South Belfast Women's Missionary Association, Lady Peirse (per Mrs. Panny (?), and to the Y.W.C.A., Rothesay, Isle of Bute, all of whom have sent large parcels of garments.

In a letter to Mrs. Sueter, Squadron-Commander John Porte, R.N., says: "The garments have just arrived, and are being distributed to the men. List was quite correct. The men are very lucky to have a 'Fairly Godmother' to look after them, they are all very pleased with the things."

The following cash contributions are acknowledged this week: Admiralty Anti-Aircraft Section (2nd contrib.), £31 6s.; Miss Newton and Miss Anne Newton, £6; the English Sewing Cotton Co., Manchester, £5; Mrs. Rathbone, £3; R.A.F. War Distress Relief Fund, £1 10s.; White and Thompson (employees' 5th contrib.), £1 8s.; Miss Gilchrist, 10s.; Mann and Grimmer (employees' 5th contrib.), 8s. 6d.; Vickers, Ltd., Erith (Woodworkers' 11th contrib.), 6s.; total for week, £49 8s. 6d.; grand total to date, £807 3s.

The following is a further list of contributors in kind:—Mrs. Crosby, Shepherd's Bush; Miss Hardy, Hyde Park; Mrs. Scott, Gillingham; Miss Rokeby, St. Albans; Miss Barnes, Cobham; Mrs. Smith, Battersea Park, S.W.; Mrs. Lewis White, Farnham; Mr. Grive, Molton Street, W.

Miss Whitby, Chislet Road, N.W.; Miss Neate, Hayling Island; Mr. Pawson, Watlington; Mrs. Spence, Bayswater, W.; Miss Mills, Gravesend; Miss Pratt, Chelsea, S.W.; Mrs. Biddle, Seaton; Mrs. Macpherson, Eastbourne; Mrs. Masthoff, Guildford; Mr. A. G. Duff, Tewkesbury; Miss Moccata, Torquay; Miss Cave, Streatham Common; Mrs. Hicks, Colwyn Bay; Mrs. Higgin, Belfast; Mrs. Gardner, East Sheen, S.W.; Miss D. Morgan, Harrington Gardens, S.W.; Dow, Lady Tankerville, Tonbridge; Mrs. Young, Kilburn, N.W.; Mrs. Lewis, Eastbourne; Miss Ward, Cheltenham; Miss Eve, Kensington, W.; Contessa di Chanaz, Glasgow; Mrs. Stern, Whitwell; Miss Pindbut, Southsea; Mrs. Warr, Bath; Mrs. Semers, Donnybrook, Dublin; Mrs. Clements, Wallington; Mrs. Bridger, Richmond; Miss Agar, Surbiton; Rev. A. Morgan, St. Leonards-on-Sea; Miss Hardy, Bath; Lady Beatrice Pretzman, Ipswich; Mrs. Hearty, Falmouth; Miss Young, Carisbrooke.

Lytham Needlework Guild (per Mrs. Fair), Lytham; Mrs. Poyser, Stockport; Mrs. Clark, Maidstone; Miss Sebastian,



Battersea Park, S.W.; Miss Rose, Instow; Miss Pow, Arundell; Mrs. Rust, Soham; Mr. C. Louch, Totton; Mrs. Oldfield, Oldham; Mrs. Lett, Forrock; Mrs. Addie, Richmond; Miss Leal, Lower Clapton, N.E.; Mr. B. C. Cooper, Adelphi, W.C.; "H." Cheshunt; Mrs. Lowe, St. Albans; Mrs. Brett, Kensington, W.; Mrs. Simpson, Dovercourt; Mrs. Brown, Peterborough; Miss Milnes, Bradford; Miss King, Brockley, S.E.; Mrs. Running, Calne; Lady Philipps, Eaton Square, S.W.; Mrs. de Simonds, Basingstoke; Miss Berry, Witton-le-Wear; Mrs. Edmonston, Keswick; Mrs. Barling, Oxford; Mrs. Horton, Beckenham; Mrs. Belford, Dawlish; Mrs. Smith, Weston-super-Mare; Mrs. Douglas, Addingham; The Primrose League, Oxford.

Miss Morrison, Bickley, Kent; Miss Woolward, Tunbridge Wells; Miss Bostock, Tunbridge Wells; Mrs. Davidson; Miss Bulbeck, Warwick Square, S.W.; Mrs. Midgeley, Stockport; Mrs. Dobell (2 cons.), Sidmouth; Captain and Mrs. Halahan, Admiralty; Mrs. Peach, Bournemouth; Miss Taylor, Wandsworth Common.

### The Aluminium Firm.

Among the firms who find themselves thoroughly busy owing to the war, thanks to their having achieved a reputation for good work, is that of Mr. R. W. Coan, 219, Goswell Road, E.C. It has long been a proverb, as well as an advertisement, that "Coan Casts Clean Crank Cases," and that as practical workers in pure aluminium, as well as aluminium alloys, his men are not surpassed by anybody in the trade. In quite the earliest days of aviation Mr. Coan was foresighted enough to begin to take an interest in aviation work, and as a natural result he now has plenty to do in this direction.

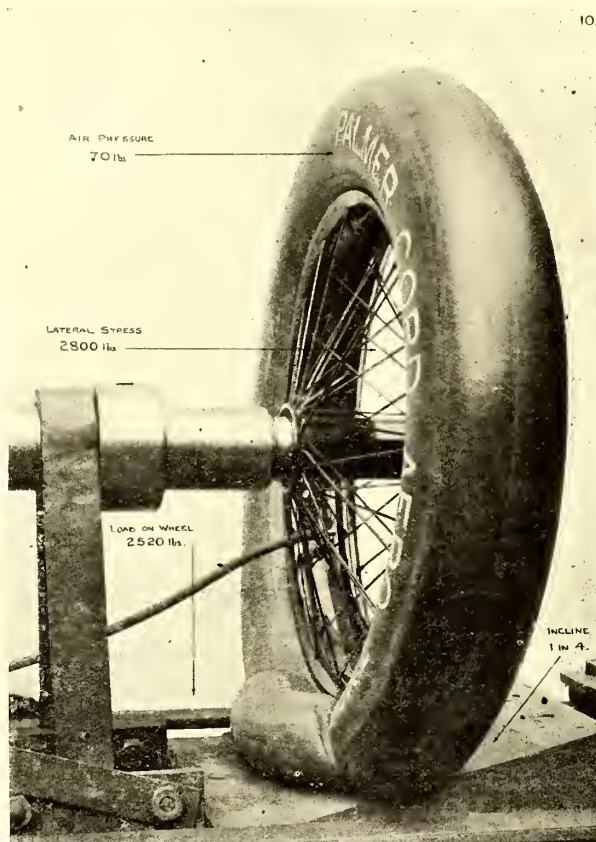
Naturally, at this time the particular nature of his work cannot be specified, but he is making a quantity of castings for various Government establishments, and apart from these he has had the job of turning out the crank cases of the new 12-cylinder Green engine, which is likely to be the most powerful aero engine yet produced in this country.

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# THE AEROPLANE

12  
WEEKLY

*Edited by C. G. GREY. ("Aero-Amateur")*

VOL. VIII. [REGISTERED AT THE G.P.O.  
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No. 10

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## The Next War.

There are those who would have us believe that the present war—which we are given to understand will begin in a week or a month or two—is to be the last war between civilised nations. If there were such things as civilised nations, or even if there were such agglomerations of human beings as nations of Christians, instead of merely Christian nations, one might be inclined to believe these idealists. But, unhappily, such peoples do not exist, and are not likely to exist for many æons of time, if indeed that most quarrelsome of animals known as Man is even capable of development into an angel upon Earth. Contemporary evidence before the war was sufficiently strong to the contrary, except to those who led the sheltered life, and since the war even the most wilfully blind must surely be convinced that humanity has made no moral progress since the days of Cain and Abel, despite the sporadic appearance of wholly just men such as Confucius, Marcus Aurelius, and Cardinal Newman, to name none greater.

That being so, one may contemplate rationally, if not with complete equanimity, the certainty of a next war when this war is over. It may not come in our time, it may not even come in the next generation, or it may come within a year or two of the outbreak of Peace. But, whenever it comes, come it will, and it is our duty to prepare for it.

### Alliances That Have Been.

Alliances are no guarantee against war. Men still living have seen French, Turks, and British in alliance against Russians. British and Bengalees against Punjabis; British and Punjabis against the rest of India; British and all Indians against Pathans; Prussians and Austrians against Danes; Prussians and Danes against Austrians; Germans, French, Russians, and British against Chinese; Prussians, Germans who were Danes, and true Germans against French; British, Turks and Egyptians against Soudanese; Russians against Japanese; Servians, Bulgarians and Greeks against Turks; Servians and Greeks against Bulgarians; and now Russians, French, British, assorted Indians, Punjabis, Pathans, Nepaulese, Soudanese, Egyptians, Servians, Belgians, and Japanese in alliance against Prussians, true Germans, Germans who were Danes, Germans who were Alsatian French, Germans who were Poles, true Austrians, Hungarians, Austrians who were Poles, Austrians who were Italians, Austrians who were Servians, Austrians who were Roumanians, and Turks.

Was ever such a topsy-turvy of alliances? What person can behold such chops and changes and still believe in the progress of humanity, the sacredness of treaties, or the abolition of war? The one thing to learn is, do not be too acrimonious about your enemies as a people, because within a few years they may be your allies. Keep your bitter animosity for the ruling personage, or the ruling cabal which makes a nation composed of individuals at least as decent as yourself into a mass of people who are anxious to cut your throat.

### The Last of Naval Defence.

The really salient point about this war, the point which can never be sufficiently emphasised, is,—this is the last war in which the British Fleet on the Sea is

going to preserve the integrity of the British Isles. It is the last war in which ships at sea will be an effective protection against damage to inland places of military importance. It is the last war in which ships at sea will be able to protect our commerce and ensure our food supplies. All of which is not to say that the Navy will become useless, or that sea-fighting will become extinct, but merely that the Navy will have different work to do, with different weapons.

A clever young engineer, now an officer in the King's Service, sketched out for me some time ago his rough ideas for a battleship proof against mines, submarines, and aircraft attack, and also a notion for a land-going battleship. In due time his ideas will be developed, someone else will get the credit for them unless he is exceptionally lucky, and they will be of immense defensive and offensive value. But the real danger of the future to this country is the development of aircraft abroad, and our only real safeguard is the development of our own aircraft of such types and in such quantities as to ensure our being able to repel any aerial invasion.

### The Chosen People.

Fortunately for us this war came before aircraft had passed that stage of development in which their use is limited to reconnaissance, artillery control, and a mild form of destructive raid. In all probability, if we had had a huge conscript Army the war would not have come till perhaps five or ten years hence, and in that period, judging by comparative progress in the past two years, Germany would have developed a huge fleet of really effective aerial destroyers while we should have been playing with small reconnaissance machines. As it has turned out, our fast air-scouts have been the salvation of our Army, and the mere smallness of our Army has caused the war to come at a period which actually best suited our peculiar position in the scheme of things. There is reason for the belief that we are indeed the descendants of the lost Ten Tribes of the Chosen People.

### Our Mild Lessons.

Recent activities of hostile aircraft have been comparatively innocuous merely because of the undeveloped state of such weapons, but, unless we are more blind than is even the English habit, we can learn from them what to expect in the future. German airships have dropped bombs inaccurately on ships at sea and on towns ashore; German aeroplanes have been no more successful, for bomb-dropping is at present bound to lack accuracy. But the ideal bomb-sighting apparatus may be evolved, and it is still more likely that the airship or aeroplane which can carry a gun of effective calibre will be produced. Then will come a period of real danger for these islands.

Placed as we are, we may continue to rule the sea. We may, if we have the nerve, announce that if any other Power attempts to produce a Navy above one-third of the size of our own, we will blow it out of the water. Warships must be built near the sea, and so long as we command the sea we can prevent those warships from ever being launched. We might have done just that in Germany's case twenty years ago. We can do it again after the war, if we will.

Even if we cannot reach the places at which the ships are built, we can blockade their egress from those



places at the mere expense of declaring war on the offending nation, and so make a commercial war do the work of actual attack.

#### **A Dangerous Despot.**

The case of aircraft is absolutely different. Aircraft can be built far inland beyond the reach of guns and beyond the hope of blockade. Let us take a hypothetical case, which cannot hurt the feelings of friend or foe. Suppose, for example, there arose in Switzerland a great leader of men, a combination of William Tell, Napoleon Bonaparte, and, say, the manager of the Ritz, who made Switzerland into a first-class power by annexing bits of the dismembered German and Austrian Empires. More improbable things have happened, and will happen again.

In the case of the Helvetian Emperor taking offence at some action of this country,—say, our imposing a protective duty on cheap watches, or tinned milk, or waiters,—we should be powerless to attack him or his people with our fleet or our army. The Swiss Navy would have undisputed control of its own waters and we could not hope to engage it. Thus, if the Emperor chose to build a huge aerial navy we should be powerless to prevent it, unless we could induce France or Italy to go to war for our special benefit.

Just as Zeppelins are now built on the shores of Lake Constance, so Helvetia could build colossal airships and aeroplanes on her own lakes, which aircraft could make themselves actively unpleasant over all parts of the British Isles, even when operating from their home stations.

#### **Future War Craft.**

In five or ten years we shall have engines which will run twice as long and give twice as much power for the same weight of fuel and the same weight of metal. We shall have aeroplanes which will need very much less power to lift the same weight at the same speed. And, consequently, we shall be able to travel much greater distances with a greater useful load of destructive implements.

Airships will also, probably, be greatly developed. It must be remembered that the newest Zeppelin of to-day (perhaps about number 40 in the workshop series) only represents about a dozen generations, or distinct stages, of evolution, whereas the modern aeroplane represents probably a hundred or more separate steps forward. This is merely simple arithmetic, because it costs something over £50,000 to build one Zeppelin, whereas nearly a hundred different aeroplanes (bar the engines) could be built for the same money.

#### **The Non-Stop Aeroplane.**

Russia has long led the way in experiments with really big aeroplanes, and lately Italy has been trending in the same direction, but as yet neither has produced a definitely assured success. Still, the results have been encouraging.

Some time ago a foreign aviator who had been concerned in certain of these experiments enunciated a theory which seems worth considering. His idea was that the evolution of the big aeroplane would abolish the seaplane. He argued that with a multiplicity of engines, half of which could be stopped at a time without the machine being forced to descend, there would be no need to come down on the water at all. The big craft would go from port to port with more than the certainty of an ocean liner, and short of a collision in the air there could be no reason for an involuntary descent. Therefore there could be no reason for lugging about vast floats, or a boat hull, which did no work when in the air. For use in uncivilised parts of the world,—he unkindly cited the United States as an instance,—he admitted the utility of the flying-boat because of its ability to use big water areas as alighting places, but wherever air-lines between cities only 1,000 miles or so apart were established, he held that landing-grounds sufficed. Even for trans-Atlantic liners he believed that land-going machines, launched from a

trolley, and landing on simple skids, would be more efficient and effective.

#### **Air Versus Sea Fleets.**

When one realises the arrival in the quite near future of aeroplanes of 1,000 h.p. or more, one sees easily that we are already in sight of aircraft of considerable destructive power, against which our Fleet at Sea will be powerless to protect us, for though such aircraft could certainly be brought down by naval guns at any height they could possibly reach, there is no probability of aeroplanes ever coming within horizontal range. With their enormous range of vision, and big excess of speed over any sea-going craft, they could easily circumnavigate any fleet. Also they could avoid any points along the coast protected by anti-aircraft guns, for no nation is likely to set up a complete hedge of guns along its frontiers. Moreover, if such a hedge were set up, an aeroplane on a favouring wind would only be within range for a few seconds as it passed overhead.

Therefore, as a logical sequence, one sees that only one form of defence is possible, namely, a thoroughly adequate aerial defence force, one which is strong enough for defensive attack.

#### **Humanitarian Cant.**

In the next war there will be no nonsense about "zones of military operations," "open and undefended towns," and so forth. It will be recognised that every town and every village all over any country at war is either a training place or a billet for troops. The futility and hypocrisy of Hague Conventions and Declarations of London, and so forth, will be honestly admitted. There will be no question of combatants and non-combatants. Two nations will be at war, and there will be an end of argument. Natural chivalry as between man and man, or man and woman, may, as in any savage country and in all ages, prevent in some degree the grosser forms of outrage or brutality, but the folly of trying to make rules for war may well be recognised.

In those days aircraft will hasten the end of war, instead of, as at present, merely producing a dead-lock between combatant land forces. Bombarding aircraft will find a mark wherever they may be over hostile territory, and they will only be kept away by superior forces of defensive aircraft.

Therefore we must set to work in earnest to develop our aircraft industry, for we shall need our small fast scouts as at present, our slower and more stable reconnaissance machines, and, in addition, our huge, armed and armoured, multi-engined, long-distance offensive aircraft, all of which will be needed to repel attack and the last-named particularly to invade hostile territory.

Now is not the time to experiment on a large scale, though we in this country can afford to experiment to some extent better than our enemies or our Allies. We must concentrate our energies on increasing the output of the types we know to be effective. But we shall do well to look the future fairly in the face, and make up our minds to what is in store for us.

#### **Service Developments.**

The Flying Services of to-day are mere trifles compared with what they must be in the future. If every officer now appointed to a temporary commission in the R.N.A.S. and R.F.C. justifies his appointment and is retained in the Services after surviving the war, there will still be too few to command all the new flights and squadrons which must be formed when the war is over and we have time to set about organising Naval and Military Aeronautics on a sound footing.

When one thinks of the work it will have to do, it is obvious that the personnel of the R.N.A.S. alone will have to be as numerous as that of the existing Navy, and, if we have the sense to reorganise our Army on a proper basis, the R.F.C. will probably be as large as the old Expeditionary Force.

The aircraft industry must increase in size proportionately, and firms which are now gingerly essaying





*The personal ascendancy of our airmen (vide General French's report) is only made possible by the superiority of our machines.*

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to establish an aircraft department will find ere long that the aircraft department is absorbing the rest of the firm. There will, of course, be ups and downs, booms and slumps, firms will die and new firms will arise, but the aircraft industry as a whole will grow enormously, for there will also be a great commercial and sporting side to be worked upon.

#### **The Greatest Locomotion Industry.**

Be it remembered that the aircraft of the future will range in size and price all the way from a small simple aeroplane, comparable to a motor-cycle or cycle-car, right through various medium-sized passenger and mail carriers of the touring car or motor lorry class—which is about where the motor industry ends.—up to enormous air liners and fighting craft of such size that they

can only be tackled by ship-building yards. In no other branch of engineering is there such a range of sizes and such scope, for even in marine engineering, which ranges from a dingy with a single-cylinder engine stuck on the rudder-post, up to the "Olympic" and the "Queen Elizabeth," the manufacturer is confined to water areas, just as the automobile and locomotive industry is confined to land, whereas aircraft cover land and water alike.

When one looks only a little way ahead, as I have ventured to do, the future development of aircraft in war and peace alike seems almost of staggering dimensions, but amidst all these brilliant prospects let us remember that wars will never cease, and that the best safeguard of peace is preparation for war.—C. G. G.

## **R.A.F. Methods.**

The methods adopted by the ruling clique at the Royal Aircraft Factory to aggrandise itself at the expense of other people have frequently been exposed in this paper, and it has been proved beyond dispute how these methods, with those of other allied forces forming the Government Mutual Admiration Society, have hindered the progress of aeroplane and aero-engine design in this country, and consequently affected deleteriously the equipment of the Royal Flying Corps before the war. When war broke out it was hoped that petty jealousy of outside manufacturers might be buried, and that all might work together for the good of the Services; but, unhappily, the old policy of the civilian officials still continued, and it was necessary for this paper to continue to criticise the sins of omission and commission of these officials.

Apparently some of the criticism has gone home, for the latest report from friends in the enemy's camp is that it is the intention of the ruling clique to endeavour to get this paper suppressed under the Defence of the Realm Act, or some such recent enactment, on the grounds that its criticism of the R.A.F. is calculated to undermine the confidence of the people of the said realm in its defensive forces, or some such specious argument.

Political pull may be used in various ways, of course, but it is a game at which two can play, and one awaits developments with equanimity. In warfare there are unpleasant things known as masked batteries, which are not used till they are really needed to repel a serious attack on an important position. Anyhow, if such action as that mentioned above is seriously contemplated, it is a subtle compliment both to the efficiency and effectiveness of this paper, and rather a good advertisement for it among those in the Services and in the aircraft industry who do not love the R.A.F.

Talking of advertisements, another method of attack has recently been disclosed which is eminently characteristic of

the people concerned. A certain manufacturing firm which had been doing business with the R.A.F. decided to seek a wider market—that is to say, among the "Trade," so regularly condemned by the Press agent of the R.A.F. The firm in question was definitely advised by the R.A.F. people to advertise its wares in a paper other than this. In other cases it seems that firms have been advised to stop advertising in *THE AEROPLANE* if they want to do business with the R.A.F.

In a country which prides itself on its free and independent Press it is instructive to think that if one chooses to be sufficiently servile one may be able to engage the services of a Government department as an advertisement canvasser.

The methods indicated as being used against this paper suggest rather those of the Irish American or the German Jew than those of either the British sportsman or the English business-man. However, in its fight for better and more plentiful equipment for the Flying Services *THE AEROPLANE* is quite prepared to meet attacks by those who are most severely touched by its criticism.

Meantime, it is interesting to note that the R.A.F. has succeeded in raising the speed and climb of one of the inherently stable machines to only a little less than that of the best of the "trade" designed machines by putting in a big engine and using the stripped chassis, but not streamlined wires. Whether it is fit for use with such a chassis, or whether the engine in question will stand up to continued use, is a matter still to be proved, as also is the question as to whether the aeroplane will stand up to the engine; but presumably the A.I.D. will see that only R.A.F. pilots are used to find out the answer. Meantime, one becomes still more interested to know what several first-class "Trade" machines would do with stripped chassis and big engines, provided, of course, the R.A.F. is not permitted to "corner" the best and biggest engines for its own purposes.—C. G. G.



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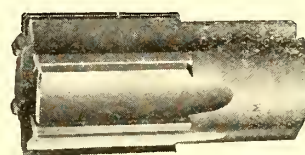
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## Naval and Military Aeronautics.

### GREAT BRITAIN.

From the "London Gazette," March 2nd, 1915.

ADMIRALTY, FEBRUARY 25TH.

ROYAL NAVAL AIR SERVICE.—The undermentioned gentleman has been granted a temporary commission as squadron commander: A. Ogilvie. Dated February 19th, 1915.

WAR OFFICE, MARCH 2ND.

REGULAR FORCES.—COMMANDS AND STAFF.—The undermentioned appointments are made:—

QUARTERMASTER-GENERAL'S STAFF.—Deputy Assistant Quartermaster-General—Major J. T. Dreyer, Royal Artillery, from a deputy assistant director at the War Office. Dated February 19th, 1915. (Substituted for the notification which appeared in the "Gazette" of February 2nd, 1915.)

\* \* \*

A third Supplement to the "London Gazette" of March 2nd, published on March 3rd, contains the following military appointments:—

WAR OFFICE, MARCH 3RD.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—The undermentioned appointment is made:—

EQUIPMENT OFFICER.—Second Lieutenant R. H. Collier, Special Reserve, and to be temporary captain, vice Temporary Captain F. C. Jenkins, Special Reserve. Dated February 16th, 1915.

SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—The probationary appointments of the undermentioned second lieutenants are cancelled: R. C. Freeman. Dated February 4th, 1915. M. V. Morgan. Dated February 13th, 1915.

Second Lieutenant (on probation) C. C. Wigram is confirmed in his rank.

L. W. Yule to be second lieutenant (on probation). Dated September 17th, 1914, but not to carry pay or allowances prior to December 23rd, 1914.

H. R. Nicholl to be second lieutenant (on probation). Dated February 16th, 1915.

\* \* \*

From the "London Gazette," March 5th, 1915.

WAR OFFICE, MARCH 5TH, 1915.

REGULAR FORCES.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—The undermentioned second lieutenants (on probation) are confirmed in their rank: J. J. Hammond and F. W. Goodden.

C. D. Fuller to be second lieutenant (on probation). Dated January 28th, 1915.

\* \* \*

A Supplement to the "London Gazette" of March 5th, published on March 6th, contains the following military appointments:—

WAR OFFICE, MARCH 6TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—The undermentioned appointment is made:—

Flying Officer—Lieutenant Colonel Sir B. B. M. Leighton, Bart., Territorial Force Reserve, from the Reserve. Dated February 5th, 1915.

\* \* \*

A Second Supplement to the "London Gazette" of March 5th, published on March 8th, contains the following:—

WAR OFFICE, MARCH 8TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS (MILITARY WING).—The undermentioned appointment is made:—

Equipment Officer—Lieutenant (temporary Captain) J. Valentine, Special Reserve, a flying officer. Dated February 8th, 1915.

### NAVAL.

The following appointment was announced at the Admiralty on March 3rd:—

Royal Naval Reserve.—Acting Sub-Lieutenant L. H. Hardstaff, transferred to the Royal Naval Air Service as probationary

sub-lieutenant, and appointed to the "President," additional, for Royal Naval Air Service, to date February 3rd.

\* \* \*

The following appointment was announced by the Admiralty on March 6th:—

ROYAL NAVAL AIR SERVICE.—Mr. T. C. Vernon, entered as probationary flight sub-lieutenant, and appointed the "President," additional, for Royal Naval Air Service, to date March 5th.

\* \* \*

The following appointment was announced by the Admiralty on March 8th:—

ROYAL NAVAL AIR SERVICE.—Mr. R. G. Mack entered as probationary flight sub-lieutenant, and appointed to the "President," for Royal Naval Air Service, to date March 6th.

\* \* \*

The Secretary of the Admiralty made the following announcement on March 4th:—

The operations in the Dardanelles were resumed at 11 o'clock last Monday morning (March 1st), when his Majesty's ships "Triumph," "Ocean," and "Albion" entered the Straits and attacked Fort No. 8 and the batteries at White Cliff. . . .

An air reconnaissance made by naval seaplanes in the evening reported that several new gun positions had been prepared by the enemy, but that no guns had been erected in them.

The seaplanes also located a line of surface mines. During Monday night a force of mine-sweepers, covered by destroyers, swept within a mile and a half of Cape Kephez, and their work, which was carried out under fire, is reported to have been excellent.

A further report received states that yesterday (Tuesday, March 2nd) the "Canopus," "Swiftsure," and "Cornwallis" engaged Fort No. 8. . . . Seaplane reconnaissance was impossible on account of the weather. . . .

\* \* \*

The Secretary of the Admiralty made the following announcement on March 6th:—

Further reports have now been received from Vice-Admiral Carden on the operations of March 3rd and subsequent days.

No action was possible on the 3rd till 2 p.m., when, although the weather was still unfavourable, "Irresistible," "Albion," "Prince George," and "Triumph" resumed the attack on Fort Dardanus (E). . . . A useful seaplane reconnaissance located several encampments and two permanent batteries.

On March 4th the weather became fine, and the sweeping and bombarding operations within the Straits continued steadily. Meanwhile demolition parties, covered by detachments of the Marine Brigade of the Royal Naval Division, were landed at Kum Kali and Seddul Bahr to continue the clearance of the ground at the entrance to the Straits.

[It is probable that officers of the R.N.A.S. may be heard of in connection with the movement of Mr. Churchill's Army indicated in the latter paragraph.—Ed.]

\* \* \*

The Secretary to the Admiralty made the following announcement on March 8th:—

The operations against the Dardanelles are progressing, favoured by fine weather. . . .

Owing to the importance of locating the concealed guns the seaplanes have had to fly very low on occasions. On the 4th instant a seaplane (pilot Flight-Lieut. Garnett, observer Lieut.-Commander Williamson) became unstable and nose-dived into the sea, both officers being injured. Flight-Lieutenant Douglas, reconnoitring at close quarters in another seaplane, was wounded, but managed to return safely. On the 5th, seaplane No. 172 (pilot Flight-Lieut. Bromet, with Lieut. Brown) was hit no fewer than twenty-eight times and seaplane No. 7 (pilot Flight-Lieut. Kershaw, with Petty Officer Merchant) eight times in locating concealed positions. The "Ark Royal" is equipped with every appliance necessary

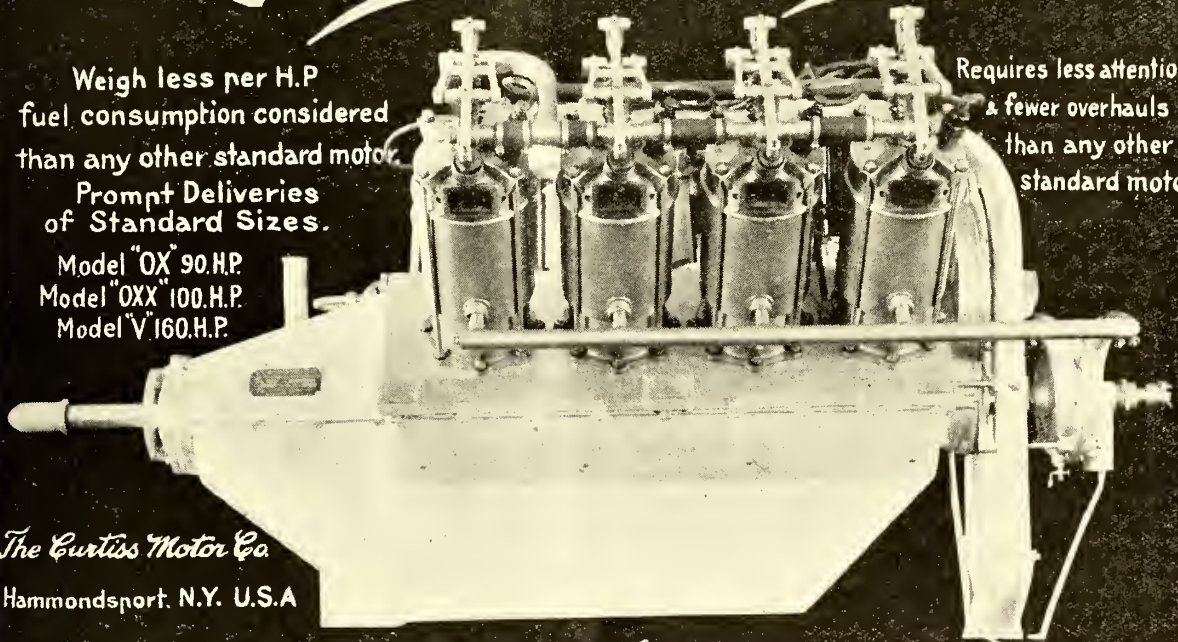
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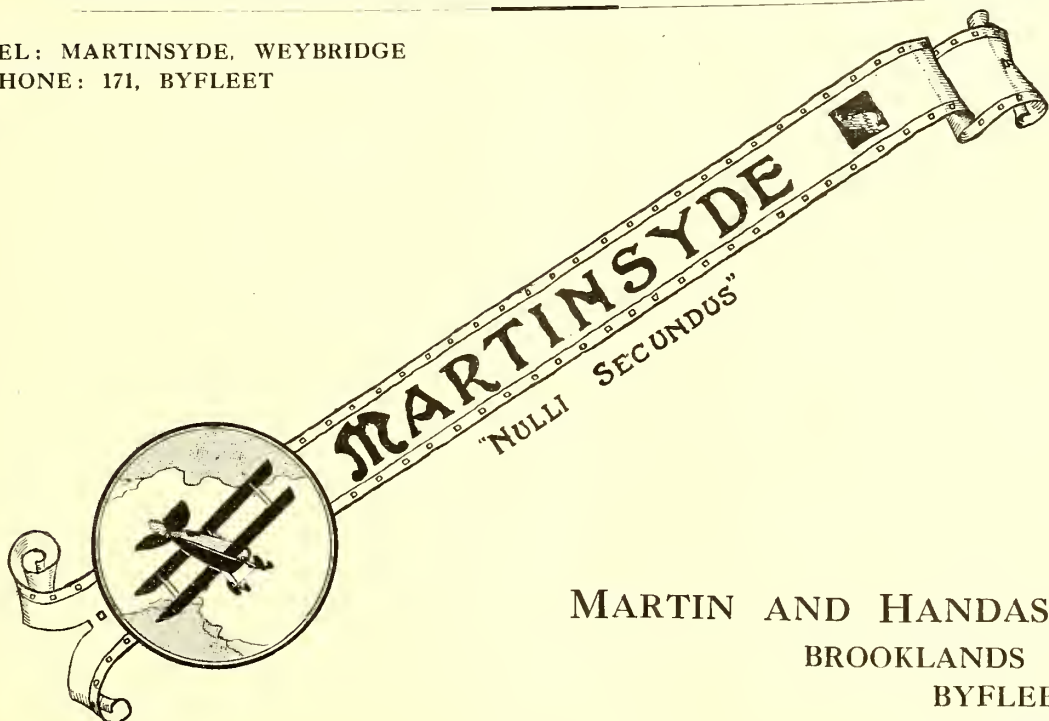
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for the repair and maintenance of the numerous aircraft she carries.

["Became unstable" is rather a pretty euphemism. One wishes the officers a quick recovery of hygienic equilibrium.—Ed.]

\* \* \*

The Secretary of the Admiralty made the following announcement on March 8th:—

Wing Commander Longmore reports that an air attack on Ostend was carried out yesterday afternoon by six aeroplanes of the Naval Wing. Of these, two had to return owing to the petrol freezing.

The remainder reached Ostend and dropped 11 bombs on the submarine repair base and 4 bombs on the Kursaal, the headquarters of the military.

All machines and pilots returned.

It is probable that considerable damage was done. No submarines were seen in the basin.

The attack was carried out in a fresh N.N.W. wind

\* \* \*

In the dispatch received at the Admiralty on March 3rd from Vice-Admiral Sir David Beatty, K.C.B., M.V.O., D.S.O., commanding the First Battle Cruiser Squadron, dated H.M.S. "Princess Royal," February 2nd, and reporting the action in the North Sea on Sunday, January 24th, the following passage occurs relating to aircraft:—I boarded and hoisted my flag in "Princess Royal" at about 12.20 p.m., when Captain Brock acquainted me of what had occurred since the "Lion" fell out of the line. . . . He also informed me that a Zeppelin and a seaplane had endeavoured to drop bombs on the vessels which went to the rescue of the survivors of "Blücher."

\* \* \*

The Press Bureau issued the following on March 4th:—With reference to statements which have appeared in some newspapers, the Secretary of the Admiralty announces that Commander Samson, R.N., is in command of armoured cars, aeroplanes etc., on the Continent, and that the officer in command of all British armoured trains is Commander A. Scott Littlejohns, R.N."

\* \* \*

The detachment of the R.N.A.S. abroad will note with interest that the Bishop of London dedicated the first of the Church Army bar-cars on March 3rd at Grosvenor Square. The bar-cars are to provide refreshments to the troops abroad, and Prebendary Carlile said that it was intended to provide a bar-car for the "naval air section" as soon as possible. The Bishop said that the troops were always exposed to the temptation of drink, and these bar-cars were to provide them with something that would counteract the influence of the canteen.

[Apparently, the ecclesiastical view is that our Army does worse than merely swear terribly in Flanders, according to the historic precedent. One may note, however, that a huge fortune still awaits the man who can invent a teetotal drink which is worth drinking.—Ed.]

\* \* \*

A telegram from Dundee to the "Times" states that the Glasgow steamer, "Dalblair," carrying a cargo of jute for Calcutta, on arrival at that port—[Query, which port?—Ed.]—reported that when off the Essex coast the ship was attacked by two aeroplanes. The captain states that both aeroplanes were yellow in colour and had the curved wings of the Taube type. Several bombs were dropped by the aircraft, but none struck the vessel, which continued her voyage without further adventure.

Another account says that the ship shrieked for assistance, with her siren, and the assailants then ran away. It also says that the ship arrived at Dundee from Calcutta.

The Grimsby correspondent of the "Daily Telegraph" reports on March 3rd:—"An oil tank steamer, carrying a large cargo of oil fuel, arrived in the Humber, after a most exciting voyage. Whilst the vessel was between Yarmouth and Spurn Head an enemy aeroplane was sighted in pursuit, and upon coming within easy distance the pilot brought the airship (sic) to a low altitude, and then as it circled over the steamer three bombs were dropped.

"Simultaneously with the attempted destruction of the vessel the captain rapidly altered its course, the result being that the three bombs, which were thrown in rapid succession, missed the ship and fell into the sea. The aviator then flew in an opposite direction. It is stated that only the smart manoeuvring of the vessel saved her from being hit."

[A ship which can manoeuvre smartly enough to dodge bombs seems to be worth investigating. Apart from that, the recent activity of aircraft over the North Sea suggests that there is likely to be plenty of work for our seaplane carriers in the near future.—Ed.]

\* \* \*

Owing to an unfortunate inaccuracy on the part of a correspondent the name of Flight Sub-Lieutenant T. F. Driscoll, R.N., has been mis-spelt on more than one occasion. The error is the more regrettable as he is a son of Colonel D. O. Driscoll, D.S.O., who distinguished himself in South Africa.

\* \* \*

One of the prize stories of the war is told of a naval aeroplane. The machine, with an officer pilot and a warrant or petty officer telegraphist was co-operating with artillery in a new system of signalling. The day was cold and the wind was bumpy, and the aeroplane crew were frankly bored. Presently the battery signaller sent a message: "Battery out of action for an hour, remain aloft awaiting orders." Back came the reply with remarkable promptitude: "Submitted; that this machine is not fitted with sky-hooks."—Collapse of battery signaller and narrow escape from apoplexy of battery commander.

#### MILITARY.

The Official Casualty List, issued under date March 1st, includes the following:—

MISSING.—Second Lieut. M. R. Chidson, R.G.A., and Royal Flying Corps; Second Lieut. D. C. W. Sanders, R.F.A. and Royal Flying Corps

\* \* \*

The casualty list of February 28th, issued on March 4th, contains the following:—

WOUNDED.—Watkins, Captain H. E., Essex Regiment.

\* \* \*

The casualty list of March 4th, issued on March 6th, contains the following:—

WOUNDED.—Wadham, Second Lieutenant V. H. N., Hampshire Regiment and Royal Flying Corps.

\* \* \*

In his Dispatch, published on March 6th and dated March 4th, the Field-Marshal Commanding the British Forces in France reports as follows:—

On March 2nd one of our aeroplanes, flying behind the German lines, twice attacked single German machines and forced them both to descend.

\* \* \*

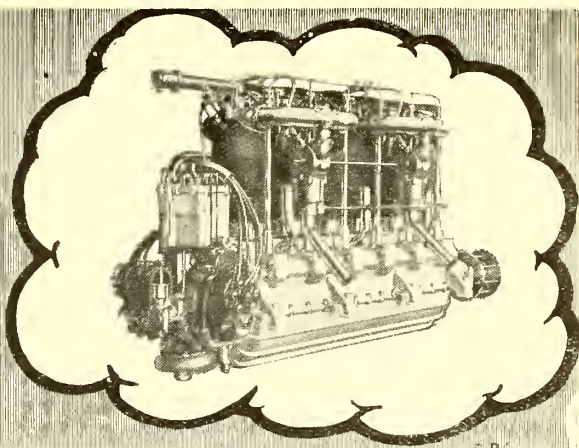
An Army biplane from Brooklands, piloted by Lieut. Hooper, came down about 11 a.m. at Thames Ditton on March 4th, owing to engine trouble. Mr. J. A. Wiley, a local grocer, who was acting as a special constable, went to see whether he could render any assistance, and a few moments later suddenly fell dead by the machine.

\* \* \*

In a dispatch from the "Times" Paris correspondent is given a description of a visit to the British Headquarters in France which he was permitted to make in company with certain other newspaper representatives. The following passage referring to aircraft is of interest:—

The fleet of aeroplanes derives its strength from the storehouses and workshops which have sprung up around it. In the storehouses you will find every imaginable spare part, from engines to struts; in the workshops there are Army carpenters hard at work repairing the wooden lace of damaged frames, tailors sitting cross-legged stitching away at wing repairs which cannot be tackled by the sewing machine; electricians fitting wireless apparatus into the machines, operators taking wireless messages from distant aeroplanes, mechanics seeing to the guns carried by the craft, and testing engines; the

# BEARDMORE AEROENGINES

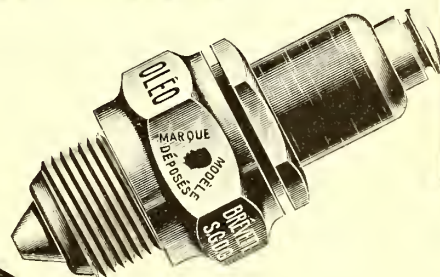


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record office keeping its reports of each flight, its success or non-success; others seeing to stores. The activities of the Royal Flying Corps are most apparent on land, though it is through the air that they obtain their results and upon the general scheme of the operations, the movement of troops, or the fire of our artillery that they are finally given active expression.

The task of the military airmen is threefold and relates to strategy, tactics, and artillery. For routine work at all events it is under these three headings that the air is divided. In the first class come the flights covering some 30 miles of country behind the enemy trench line. The photographs and reports furnished by the airmen over this area enable the General Staff to have early information of big movements of troops and to gain some knowledge of the main lines of the enemy's intentions. The second zone, which stretches for about 10 miles behind the trench line, is that in which more immediate tactical movements are prepared. The third area is along the front. Here the airman notifies changes in the enemy trench line, the position of enemy batteries, giving his own artillery the range.

All this work, this organisation of detail, has but one aim—to give the Army eyes where formerly it had none, and its effect all concentrates down to the front.

\* \* \*

Despite the uniformly high level of intelligence of the average Army officer it appears that some congenital idiots do on occasion obtain commissions and manage to retain them till seniority brings commands. Report has it that one such recently invented a new system of experimenting with anti-aircraft guns. The scheme works thus. An aeroplane is sent up with instructions that it is to fly at a height of say 5,000 feet. The anti-aircraft gunners are then told to set their fuses to burst at 4,000 feet, and to fire at the aeroplane. The observer in the aeroplane is instructed to note the line and altitude of each burst.

The notion is worthy of a high-class scientist, for it takes no account of errors in instruments. It is not explained what is expected to happen if the aneroid in the aeroplane is temporarily out of order and shows 5,000 feet when the machine is only at 4,000 feet, nor what the inventor of the scheme hopes for if a fuse timed for 4,000 feet has a slight lag and bursts at 5,000 feet. The only consolation the aviators are likely to have is that the bull's-eye of the target is generally the last thing hit.

One hopes, for their sakes, that the anti-aircraft people will not take over a certain naval machine-gun expert, who is guaranteed to get 90 per cent. of shots from a Maxim into a life-buoy on the water from an airship 1,000 feet above it. He might turn out as good with a Q.F., and at firing the other way up. If so, observing experimental high-angle fire might become unpopular among R.F.C. officers.

#### FRANCE.

Paris, March 5th.

The Official Communiqué issued at 3 p.m. reported:—

Near Verdun, at the Fort of Vaux, a German aeroplane was brought down within our lines, and two aviators were taken prisoners.

\* \* \*

Paris, March 5th.

The following official account of the French aviator's attack on the powder works at Rottweil is issued:—

The powder works at Rottweil are one of the most important establishments of the kind in Germany. Rottweil is situated on the Neckar, on the other side of the Black Forest, at a distance of 92 miles from Belfort as the crow flies. One of our aviators descended as low as 5,000 feet (500 ft.?) over the works in order to throw his bombs with the greater accuracy. He succeeded in dropping four 90 millimetre melinite shells, the first on the acid tanks and the other three on the works themselves.

The projectile dropped on the tanks caused blue smoke to shoot up, which the aviator at first took for the smoke of a gun fired on himself. Soon after a huge flame rose from the same spot, with columns of thick smoke, which reached as high as the aeroplane.

The pilot remained for 10 minutes above the works in order to observe the effects of his projectiles. He was thus able to note that, besides the principal outbreak, flames caused by the explosion of the other bombs were shooting up from different points.

\* \* \*

A further official statement says:—

The daily communiqués described the bombardment of the German positions on the Belgian coast carried out by French aircraft about February 20th. Dutch newspapers to-day state that these operations achieved the following results: (1) At Zeebrugge parts of the Gare Maritime were destroyed, and submarines were damaged. (2) Thirty-three German soldiers were killed and fifty-two wounded by a bomb which fell on a train at Blankenberghe. (3) Several batteries along the coast suffered and many members of the gun crews were killed. (4) At Knoeke, a German officer and seven men were killed. No civilian was hurt and no damage was done to buildings.

\* \* \*

The following official statistics were published in Paris on March 7th. They represent the amount of flying achieved by the French aeronautical services during the period between the outbreak of war and January 31st.

The whole of the old and new squadrons carried out about 10,000 reconnaissances during 8 months of war, or more than 18,000 hours' flying. To form an idea of what was accomplished, it is sufficient to observe that these flights represent a distance of 1,800,000 kilometres, or 45 times round the world. These remarkable results were not obtained without grievous losses, which are comparable to, and often more severe than, those of other arms, so far as the number of killed, wounded, and missing is concerned.

\* \* \*

A semi-official note, issued in Paris on March 4th, says:—

One of our aviators, Captain Happe, yesterday bombarded the German powder manufactory of Rottweil, about 20 miles north of Donaueschingen. His success was complete. Ten minutes after he had dropped his bombs the powder manufactory was on fire and the flames rose to a height of over 400 yards.

Our aviator's raid involved a flight there and back of about 190 miles. In the meantime a German aviator fired on the hospital at Gérardmer, but there were no casualties or any damage done.

\* \* \*

A letter from M. Pierre Verrier dated from Paris on March 1st says:—"I am happy to give you good news. For ten days I have been walking without sticks and I hope to rejoin my escadrille in about six weeks. M. Maurice Farman has brought me to the American Hospital where I am very well cared for, and he and Mme. Farman often come to see me. I hope to see M. Thomas soon. I am being massaged regularly and am having subcutaneous injections. Tell all my friends in London that I do not forget anyone, and when I have a short holiday as a convalescent I shall come to London to see my friends at Hendon." M. Verrier's present address is: "Pierre Verrier, Aviateur Militaire, Ambulance Lycée Pasteur, Boulevard Inkerman, Neuilly-sur-Seine, Paris," and he will be glad to hear from his friends.

One cannot help being touched by the affection with which our Anglo-French friends like MM. Noel, Verrier, Gondre, Jullerot, etc., regard those they knew in this country, and their expressed hopes to return here show that even the English climate cannot chill the warmth of Gallic feelings.

\* \* \*

It is good news to hear that the Sergeant-Aviateur Louis Noel has once more been "cited." Under orders from Headquarters Staff he flew over to X followed by another aviator on a Caudron who was learning his new sector of front. On a certain occasion the Caudron pilot had to land on a plateau two kilometres from German guns where he was at once under fire and could not get his motor to start. Sergeant Noel thereupon went out under heavy fire with seven or eight gunners to the rescue. The gunners finally turned back and left him to go on alone, which was useless, so he returned and asked for three

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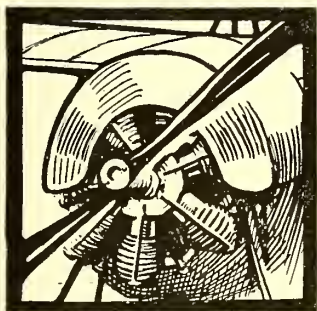
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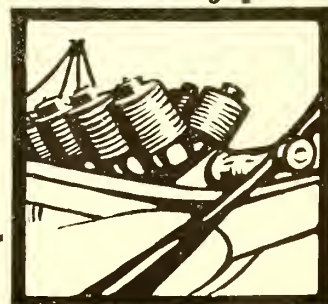
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volunteers. Eventually these three gunners, Sergeant Noel and the Caudron pilot brought in the aeroplane intact and quite unharmed themselves. This is the third time our friend has received mention in Army Orders, and he is in consequence eligible for the "Cross of the Army," which is reserved for those who have been thrice mentioned in dispatches, and is therefore even more coveted than the famous *Medaille Militaire*.

\* \* \*

The Paris correspondent of the "Times" reports that on the night of March 3rd Lieutenant Mouchard and Sapper Maillard, two French aviators, were carrying out a test flight above Chalons when their aeroplane suddenly caught fire and fell to earth. Both men were killed outright.

\* \* \*

The special correspondent of the "Daily Chronicle" in N.E. France alleges that a Zeppelin which appeared near Bethune on Wednesday was brought down and captured. Several Allied aviators went in pursuit as soon as it appeared and dropped bombs which penetrated the envelope. The hinder part of the balloon broke away and the Zeppelin fell to the ground in a collapsed condition.

[It seems highly probable that a Zeppelin that had been blown in two by bombs would fall in a "collapsed condition."—Ed.]

\* \* \*

The correspondent of the "Daily Chronicle" in Northern France says that on the night of March 4th an attempted Zeppelin raid on the French north-east coast was unsuccessful.

About 10 p.m. a Zeppelin passed over Calais in the direction of Boulogne, and precautions were taken at the latter port. Nothing was seen of the Zeppelin, which, apparently, was warned by the searchlights that the town was ready for its attack, and retreated over the sea. The night was wet and misty, and the weather alone may have accounted for the Zeppelin's failure. After leaving Calais the Zeppelin was seen again over Gravelines going east.

\* \* \*

The "Daily Telegraph's" correspondent wired the following message from Boulogne on March 8th, "with all reserve."

From reports received here, I understand that the captain of a Danish steamer sighted a Zeppelin floating on the sea. Close examination revealed it to bear the figures L 9. The wreck was seen about twenty miles north of Wimereux Bay (three miles from Boulogne port).

This may be explained by the fact that for the last few days three Zeppelins have been sighted between here and Calais manœuvring above the sea. Probably one of these met its fate in last night's hurricane that blew all along this coast.

\* \* \*

Reuter's Paris agent has succeeded in working himself up to almost the most alarming pitch of originality yet displayed since war commenced. His own manager labels the yarn "Reuter's Special," so for once is a prophet honoured in his own country.

The story tells how a lieutenant observer with a sergeant as pilot were endeavouring to rise when one shell better directed than others burst just above their heads. The sergeant is alleged to have told the story thus:

"'Are you all right, mon lieutenant?' I shouted, but received no reply. Then, opening my eyes, I saw nothing but blackness all round me. I continued in the same direction approximately for two minutes, when, to my astonishment, the lieutenant called out, 'Look out, man. Go up! Go up!' Quickly I twisted, raising the plane so quickly that the machine shot up, at the same time tearing away the weather vane from a steeple on which the machine had just escaped destruction.

"'I thank you, mon lieutenant,' I said, 'you must excuse me, but I cannot see. But you are wounded?'

"'Yes,' he answered. 'I fear seriously.' Then, seeing I was turning my back on our lines, he said, 'Make a half turn to the left. More to the left still. That's right. Straight ahead now!'

"Three minutes later the voice of the observer called, 'That's it. Here we are. I see our men down there waiting for us. Shut off the spark and volplane gently down.' I heard no

more, but soon after, at the end of a spiral, our landing wheels grated on the ground.

"There was a murmur among the bystanders, who were looking at the handsome strong pilot deprived of his sight for ever and the lifeless body of the lieutenant, who had just breathed his last, and they groaned in pity."

[The idea of the pilot getting from reconnaissance height down to the level of a weather vane in two minutes, without knowing it, even if he were blind, is distinctly unusual. His apology for hitting the steeple is even more so. The "grating wheels" is a delicious touch of artistic verisimilitude.—Ed.]

\* \* \*

An official note, issued on March 5th, states that M. Pégoud has received the *Medaille Militaire* for having on several occasions pursued enemy aircraft. On February 5th he attacked and brought down a German aeroplane. A short time afterwards he attacked two others, shooting down one and compelling the other to descend.

The "Morning Post" Paris correspondent reported on a recent date that M. Pégoud lately distinguished himself again. Information was brought in that there was an important depot of ammunition near by, and M. Pégoud set off in an hour with bombs. He dropped to 1,800 ft., and, despite heavy fire, dropped nine bombs, all of which reached their mark. The successive explosions caused so great an atmospheric disturbance that Pégoud had the greatest difficulty in recovering his balance, but at last he got back safely. A few days ago M. Pégoud brought down a German captive balloon and damaged two heavy guns belonging to the enemy. [One would like to hear more from experienced aviators about the chances of being capsize by the explosion of one's own bombs below one, as this report suggests. Probably M. Pégoud in telling his story to the Press referred to the disturbance caused by the enemy's shells.—Ed.]

\* \* \*

A French artillery officer in command of a section of the famous "75" guns writes to a friend on this side of the Channel:—

"We are living in mud—we are somewhat dirty. I have a long black beard; certainly you would not recognise me, nor should I be in correct attire for dancing the Tango! We can only rarely play football, for, having been seen by aeroplanes, the German guns came to take part in the game, and their shells made such a noise that we could no longer hear the whistle of the referee!"

#### GERMANY.

A message from the German Wireless Press, dated Berlin, March 2nd, says that an eye-witness states that on February 11th, at about 10 a.m., an English aviator dropped two bombs on the German steamer "Main." The steamer was not damaged. The "Main" is a Norddeutscher Lloyd liner of 10,000 tons. She has been interned at the Dutch port Flushing since the outbreak of the war.

[It is necessary to distinguish carefully between the German Wireless Press, which is as inaccurate as any other news agency, and the German Headquarters Dispatches, which are generally very accurate, if one makes allowances for the different point of view. If this story were true it would indicate a gross breach of neutrality by an aviator of wonderful skill as a bomb dropper and possessing extraordinary knowledge of merchant ships as viewed in plan.—Ed.]

\* \* \*

A telegram from The Hague, dated March 2nd, says:—"Reports from Germany state that one of the two Zeppelins which were flying over Cologne to protect the military bridges across the Rhine was blown down by a storm two days ago. The crew were saved, but the airship was damaged beyond repair."

[One hopes it is true, but Holland plus a news-agency is always a large pill to swallow.—Ed.]

\* \* \*

The German Wireless Press reported on March 4th:—

A wireless telegraphist named Spieler is said to have emerged unhurt from the wrecks of no fewer than four Zeppelin air-

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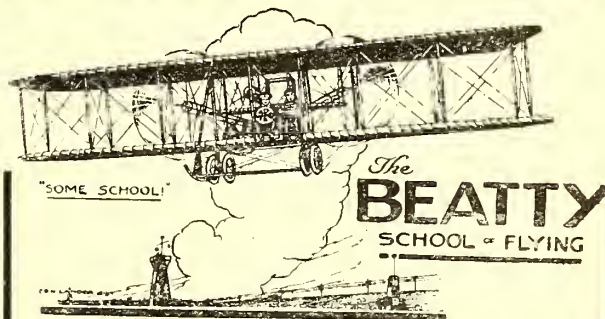
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ships. He was in the L.1, which was wrecked in the North Sea, in the L.2, which was destroyed by fire near Berlin, in the L.3, which was wrecked on February 17th, and in the L.4, which was destroyed almost immediately afterwards.

[An obvious lie, for no one survived the burning of the L.2.—Ed.]

\* \* \*

The "Daily Express" correspondent at Geneva states that Count Zeppelin arrived at Friedrichshafen on March 6th to hasten the completion of two airships now reported to be almost ready.

The news is confirmed that during a violent gale at Cologne one Zeppelin was destroyed and a second severely damaged. At the same time the airship sheds were blown down and a number of soldiers injured. [It is hardly likely that a Zeppelin shed could be blown down, so probably the rumour refers to a canvas hangar for Parsevals.—Ed.]

\* \* \*

The following news, officially circulated through German wireless stations, has been received by the Marconi Company: BERLIN, March 8th.

An enemy aviator dropped three bombs on the powder factory at Rottweil yesterday. The damage is insignificant, and work is continued without interruption. Further attacks by aviators are being prevented by a military detachment.

#### RUSSIA.

A Reuter Agency telegram dated Petrograd, March 2nd, says:—"A telegram from Warsaw states that in the East Prussian reverse aeroplanes saved two regiments of the 29th Russian Division. They guided the troops through the encircling enemy and supplied them with cartridges." [Obliging things—aeroplanes!—Ed.]

\* \* \*

The following story is reproduced, not because it is of any historical interest but because with it the Exchange Telegraph Co.'s Petrograd representative takes first place in the competition for war romances:—

The unprecedented feat of carrying a prisoner of war through the air on an aeroplane has just been performed by a Russian aviator named Terentii Paschaloff, a volunteer with General Ivanoff's army in South-West Poland. Paschaloff ascended with a mechanic in a 150-h.p. machine armed with a gun and bombs to make a reconnaissance over the Austrian lines. Motor trouble developed, and the aeroplane had to come down some distance behind the Austrian lines. The airmen then took up their headquarters in an abandoned cottage. While the mechanic was repairing the motor, Paschaloff saw an Austrian infantry patrol of 6 men approaching. It was obvious, however, that they had not seen the aeroplane, and the aviators, realising that if they wished to escape they would have to take immediate action, got the aeroplane gun to work. They discharged one shell, killing or wounding 5 of the 6 Austrians. The sixth man held up his hands and surrendered.

Having no other way of keeping the prisoner, Paschaloff tied him to the tail-frame of the aeroplane and abandoned his heavy stock of bombs. They then started on their journey back to the Russian lines. As they flew over the Austrian lines, amid a storm of bullets, the airmen looked back and saw that *their prisoner had managed to free one of his hands, and was about to cut with a knife the ropes which still bound him. It was presumably the intention of the Austrian to attack the airmen from the rear, but a blow on the head soon quietened him, and the airmen descended safely behind their own lines*

[The italics are merely inserted lest anyone should lose the points of the story.—Ed.]

#### ITALY.

The military authorities allow it to be made known that M1 has succeeded in attaining the altitude of 3,270 metres (10,000 ft.) in the course of a 5 hours' flight—climb, we presume, is meant. This, they state, is 210 metres higher than the record Zeppelin ascent. [The Zeppelin record is actually just about 10,600 ft., and was made about May last.—Ed.]

Clement Maggiora took his mechanic up to 3,790 metres (11,600 ft.) on the new 100 Parasol Caproni, on the 2nd inst. This, also, is a record. The climb took 54 minutes, and a wind not helpful to their ascent was encountered.

Ten aeronautical scholarships are offered at Lausanne University for Italian-born students. This opportunity for pursuing a complete course of study in aeronautics is due to the generosity of the Founder and Director of Lausanne Superior A. School, Professor Richard Brauzzi. (For particulars, apply Italian Aeronautic Club, Rome).—T. S. H.

#### BELGIUM.

According to alleged trustworthy information received at Amsterdam on March 5th, Zeppelin "L 8" was seriously damaged on March 4th when descending at Tirmont, and had to be dismantled for repairs.

Reuter's Zeppelin chronicler at Amsterdam cabling concerning the above incident on March 6th says: "The airship will be remounted in Germany."

[As has been pointed out before, a Zeppelin can be neither dismantled nor "dismounted." The operation would be comparable to eviscerating a "super-Dreadnought" and sending it home by train. If there is any truth in the yarn, the airship must have been a Parseval or a Gross.—Ed.]

A further report in the "Telegraaf," dated Amsterdam, March 8th, says that the airship was damaged beyond repair, the structure being broken through and the engines completely wrecked. Seventeen members of the crew of 42 were killed.

[A crew of 42 would be excessive even for a Zeppelin used as a training ship, and it is possible that the reporter may have confused the number of the crew with the commanding officer's age.—Ed.]

#### HOLLAND.

It was reported by the "Morning Post" correspondent at Amsterdam on March 4th that a "hydroplane," severely damaged, had been found in the North Sea off Ymuiden, and has been towed into the harbour by a pilot-boat. The naval authorities have made an examination, and find that the engine is a Gnome, and that one of the wings bears the inscription "Scotter."

Reuter's representative at Ymuiden reported on March 4th that the derelict "hydroplane," which had been brought in, is apparently a British machine, and is fitted with a British propeller, compass, and anemometer, and a clock which had stopped at 4.50. Doubtless the mystery of the missing seaplane will be solved in due course.

#### TURKEY.

A message originating from Rome says that on March 1st seaplanes flew over Chanak (Kale Sultanieh) dropping bombs.

\* \* \*

Amongst the war news officially circulated through German wireless stations and received by the Marconi Company on March 3rd the following telegram from Constantinople is given:—

The enemy fleet yesterday bombarded for three hours the Dardanelles unsuccessfully. At the same time an enemy fleet consisting of four French cruisers and a number of torpedo-boats unsuccessfully bombarded our positions in the Gulf of Soras; our aviators successfully bombarded the enemy's vessels.

[It will be interesting to see whether private letters confirm in some weeks' time the accuracy of the German report that the Turks are using aircraft with some success. It frequently happens that German reports, while inaccurate in detail, have a substratum of fact and supply information otherwise unobtainable.—Ed.]

\* \* \*

"Central News" reports that during the series of operations in the Dardanelles commencing on March 3rd, French seaplanes threw several bombs on the fort of Bulair. The entire peninsula of Gallipoli has been evacuated by the Turkish population.

\* \* \*

The Athens correspondent of the "Messaggero" telegraphs from Rome on March 4th that the two Turkish aeroplanes which were sighted quickly disappeared when pursued by the Allies' aviators while the French fleet were bombarding the lines of Bulair.

\* \* \*

According to a Constantinople telegram to Amsterdam, dated

March 6th, the latest official communiqué on the operations in the Dardanelles is as follows:—

Yesterday evening an enemy fleet, under a strong fire, attempted to land troops at some points on the coast near Kum Kale, out of range of our artillery. . . . Two airmen who flew across the Gulf of Saros fell into the sea and their seaplane disappeared in the water.

A telegram from Constantinople dated March 7th states:—

It is confirmed that the hostile aeroplane which fell into the sea was brought down by the fire of our batteries.

#### **SOUTH AFRICA.**

The "Cape Times Weekly" (February 12th) says that the Governor-General has appointed to commissioned rank in the Permanent Force (Staff) of the Union Defence Forces the undermentioned officers of the Active Citizen Force: As Captain, Gerard Percy Wallace, from Lieutenant, South African Aviation Corps; as Lieutenants, Basil Hobson Turner, Kenneth Reid van der Spuy, and Gordon Shergold Creed, from Lieutenants, South African Aviation Corps; as Lieutenant (on probation), Edwin Cheere Emmett, from Lieutenant, South African Aviation Corps. His Excellency has appointed the above-mentioned to the Instructional and Administrative Staff of the Union Defence Forces.

#### **SOUTH-WEST AFRICA.**

Extract from the letter of a member of "B" Squadron, I.L.H. (in G.S.W.A.), published in the "East Rand Express": " . . . A German aeroplane paid us a visit a few days ago and dropped two shells in the camp. Eight men were injured. You couldn't see me for dust. I don't like the gentleman at all. I stood watching him until I heard the shell dropping, and then I broke the record for the 220 yards. . . ."

#### **AUSTRALIA.**

The Australian Government are commandeering the one or two good aeroplanes that exist on the continent.

The local papers state that Captain Petre recently tested Mr. Walter M'Conochie's 80-h.p. Caudron with a view of purchase for the Commonwealth. Some trouble was experienced with the climbing of the machine, which seems unusual.

"Captain" Penfold has written to say that Mr. Delfosse Badgery has been flying his 45-h.p. Caudron at Concord near Sydney. He has recently returned from Tasmania and Melbourne.

"Captain" Penfold says that the ridiculous story about the late Mr. Gustav Hamel has reached Australia.

#### **JAPAN.**

From the "North China Herald," Saturday, January 30th, 1915:—

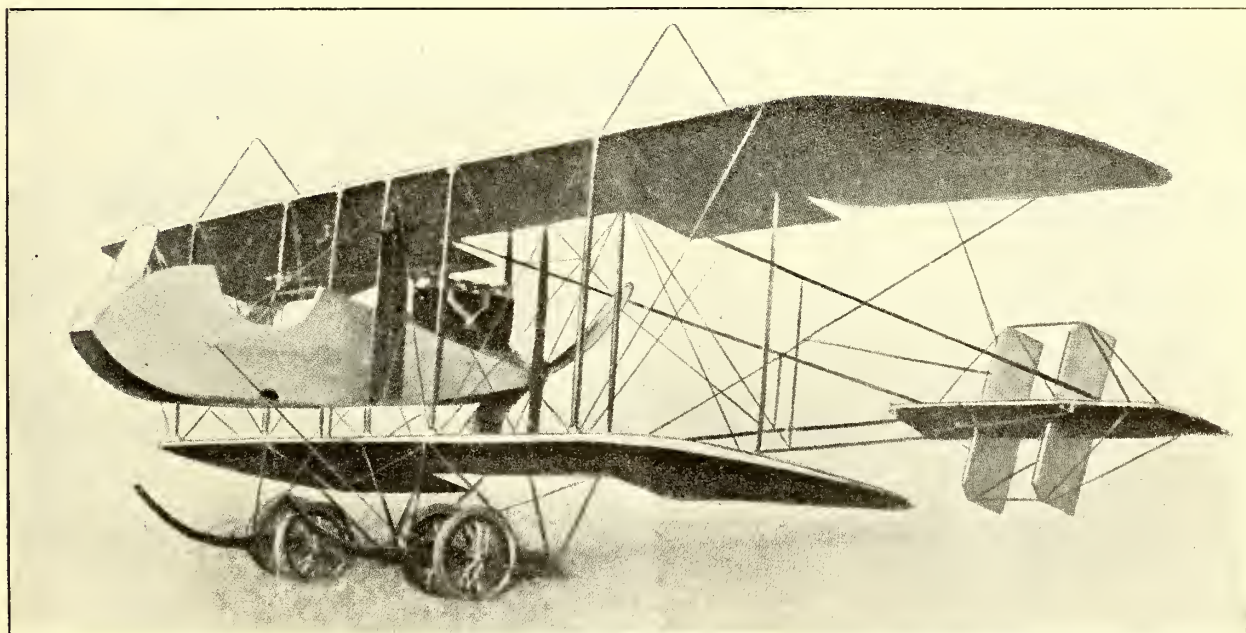
**AVIATION IN JAPAN.—MYSTERIOUS DONATIONS.**—"The anonymous foreigner who contributed Y20,000 in February, 1913, in aid of the funds of the Japan Aviation Society, and a further Y165,000 in negotiable securities in July last, has now notified his intention to remit a further Y44,000 in negotiable securities through Baron Chinda, the Japanese Ambassador in Washington. This generous individual believes that the physical constitution of the Japanese is specially adapted to aviation, and he therefore wishes to develop the art in this country, says the "Japan Chronicle." According to Japanese papers, it transpires that the donor is an Englishman of American origin, named Robert T. Wanderson (? Henderson). His home is in London, but he has a business office in New York. He wished to withhold the knowledge of his generosity from the public, but unless his name has become unrecognisably mutilated by its retransliteration from the Japanese, he has not succeeded. His means being about Y1,500,000, he cannot be described as a great financial magnate."

#### **U. S. A.**

"Of my own knowledge, and not by rumour," writes the egregious Mr. T. R. MacMechan (to whom reference was made last week) in "Everybody's Magazine," "I know that the Germans are building a fleet of giant airships, already numbering forty-eight—with Count Zeppelin himself as commander-in-chief of all the air forces. I know that Germany means to strike with her Zeppelins—strike hard. What will they do? . . . We may have the answer as these lines go to press. . . ."

"A mighty fleet for his command is being turned out by all the airship factories in Germany—not only the Zeppelin works, but the Schütte-Lanz, the Siemens-Schuckert, working at full capacity and increasing the manufacture of super-Zeppelins from six to sixteen a month. These giant aircraft are being assembled—secretly—on a barren plain north-east of Cologne—there to be tested, manned, organised; and it is Count Zeppelin himself who will direct the air attack that Germany plans against her enemy. . . ."

[The Schütte-Lanz is not a Zeppelin, and the Siemens-Schuckert firm have been trying to build airships without success for years past. The figure 48 is probably arrived at by adding up the shop numbers of all Zeppelins, Parsevals, Schütte-Lanzes, and Grosses, since the beginning of aerial



**A POSSIBLE ALLY.**—The small pusher biplane built by the Anglo-American firm of Thomas Bros., Ithaca, New York.



navigation, including all those destroyed. It will be remembered that Mr. MacMechen claimed to have been building aircraft for the British Government. In view of this his alleged intimate acquaintance with Germany may be worth investigating if he should eventually return to this country.—Ed.]

Another American firm which seems capable of making aeroplanes which fly is the Christofferson Aviation Co. of San Francisco. Last winter the firm built two flying boats intended for Capt. Amundsen, the Polar explorer, but these were never delivered, as the delay in opening the Panama Canal or lack of financial necessities prevented him from visiting that State. Consequently these boats were used for an aerial ferry between Oakland and San Francisco. One of the Christofferson boats was bought by Henry Unne, a Japanese pilot, who took it back to Japan last Spring.

#### CANADA.

A Canadian reader of THE AEROPLANE writes:—"I have been a reader of your magazine for a considerable period, both at home and abroad. I have been very much absorbed in some of your topics, and amused at some of your jokes, but I can truthfully say that when I read the account re Capt. E. L. Janney under the 'Canada' heading, I was amused and interested at the same time."

The writer of the letter goes on to state that the original Canadian Flying Corps was composed of three men, Capt. Janney, Lieut. Sharpe (who was killed at Shoreham last month), and Sergt.-Major H. A. Farr; also there was a Burgess-Dunne biplane, good for at least 40 m.p.h. in a calm. This machine now reposes in a shed on Salisbury Plain, and is not even a vision of its former self, not through any accident, for it has never been flown in England, though it flew much in the United States, being used by the Burgess Co. as a demonstration machine for "—steen years," as he puts it. There is, however, a good Curtiss O.X. motor rusting away, and only needing an overhaul.

Apart from this, the Canadian Flying Corps now appears to consist of the Sergt.-Major only, without an aeroplane, for the last heard of Capt. Janney was that he was on his way to Canada, as plain civilian Mr. Janney, it having been announced in orders that he had resigned his commission. It is stated that he was never in the R.F.C., he has never flown in England—not even as a passenger—and he has never been on service on the Continent.

There seems to be an idea in Canadian circles that the R.F.C. will not undertake to train any more Canadian aviators since the death of Lieut. Sharpe.

#### Questions in the House.

On March 4th, Mr. Jowett (Lab., Bradford, W.) asked the Prime Minister what precautions were taken by the British forces engaged in operations in Belgium to prevent damage being done to the population and property of the Belgian nation in the course of air raids or land and sea bombardments of towns and villages by British forces.

Mr. Asquith: The attacks are directed only against points of military significance, and every precaution is taken to avoid damage not necessary to the object in view.

Mr. Snowden (Lab., Blackburn): Have the Government any information as to the recent air raid in Belgium, when bombs were dropped indiscriminately, and, as a result of one of these men's escapades, five civilians were killed? ("Oh, oh!")

Mr. Asquith: No. Our information is not to that effect.

[Questions of this sort really make one despair of the intelligence of one's fellow-countrymen. The R.N.A.S. will doubtless appreciate the phrase "one of these men's escapades." If any civilian inside the sphere of military operations gets hurt he has only himself to blame, for he has no right to be there, especially when he is in a country occupied by hostile forces. Apparently, the only sensible people in war are the Russians. In Napoleon's day they evacuated Moscow en masse. In this war they gave notice that if and when they advanced into Germany they would take no responsibility for the lives and

property of the civilian population, and advised them to clear out.—Ed.]

#### Vive le Sport!

Mr. Frederic Harrison, whose military articles in "The English Review" receive considerable attention, writes in the "Times" as follows:—"Sir,—Surely there is a paramount military reason that supports your condemnation of Epsom racing this year, and displaces the historical arguments so ably stated by Lord Rosebery and other breeders. It is this. War to-day, for the first time, is largely an affair of aeroplanes. The huge muster of some million of men and women, with booths, tents, cars, and paddocks, is exactly known to the enemy—the spot, the day, the hour, the nature of the vast encampment are all notorious and obvious. Imagine the scene if, as all eyes were strained towards the start, a fleet of Zeppelins and aeroplanes bore down and hurled a storm of bombs and fireballs on the dense crowd! Would not the whole civil and military organism of the country be shaken?"

[Even the context leaves one in doubt as to whether Mr. Harrison intends to be humorous or sarcastic or neither. If such an event as he depicts took place the "scene" would be one of the most comic on record. A crowd of race-course loafers trying to get under cover on Epsom Downs would be funnier than a pantomime, especially as any casualties which occurred would not affect the good of the country. Mr. Harrison, unfortunately, omits to mention how the German air fleet is to get to Epsom, or how it would get back afterwards, or why it should go to Epsom when doing so would mean passing over London, left unprotected owing to all its defenders, presumably, having a holiday at Epsom. Perhaps, though, the whole idea has merely been evolved by our scheming diplomats so as to tempt the Germans over, so that our aircraft can attack them. Thus, the otherwise useless race-course crowd would be useful as ground-bait.—Ed.]

#### Our New Game Laws.

The Home Secretary was recently approached by property owners in Cheshire, who asked him if civilians, possessing firearms and fearing damage to their property, would be at liberty to fire on hostile aircraft. According to the "Times," Mr. McKenna has replied that "no persons should fire except those really qualified to distinguish between hostile and English flying men."

If this rule is obeyed flying by hostile or friendly aviators should be fairly safe, for not more than .001 per cent. of the population of the British Isles could make a distinction with certainty between hostile and English aeroplanes, and none at all could distinguish between the men while in the air. It is curious that Mr. McKenna makes no provision for dealing with British aviators who are not English, and who compose the majority of the R.F.C. and R.N.A.S. Presumably, they do not come under his new game laws, and may be shot without fee or licence. This seems a lawyer-like way of avoiding responsibility.

#### The Insurance of Aviators.

Apropos the question of insurance, the mother of a flight-sub-lieutenant writes:—"I am pleased to read your note on 'The Insurance of Aviators.' Can you tell me of a reasonable company which does not want to extract such exorbitant premiums? I inquired of a company, as I wanted my son to get insured before he is a lieutenant, but the premium was out of all reason, and then an extra premium to be paid as soon as flying for the Government."

Another reader writes:—"A friend of mine joined the Royal Flying Corps, and eleven years ago he insured his life for £40,000. As the surplus premium on his being allowed to fly for his country amounts to £3,000, he has simply had to chuck it."

#### Energy.

Father Bernard Vaughan seems a most untiring ecclesiast. It is said that on Saturday, March 6th, he conducted service at Aldershot, flew in a biplane, and addressed the boys and girls in the Convent High School. In the afternoon he went to see the start of the cross-country championship of the 14th Division of the New Army. In the evening he fulfilled an engagement in East London.

**The R.N.A.S. Comforts Fund.**

There has been a considerable improvement in the contributions received this week, and Mrs. Sueter gratefully acknowledges the following cash remittances:—Lieut. E. V. Sassoon, R.N.V.R., £10; Mr. Seymour Eaton, £10; Sopwith Aviation Co., Ltd. (4th contrib.), £8 2s. 1d.; Miss Campbell, £5; Miss Gillson (3rd contrib.), £3 3s.; Mrs. Inglis, £2 12s. 6d.; Miss Pope, £2 2s.; Mrs. Roper, £2; Mrs. Prendergast, £1 1s.; Miss Amots, £1; Mrs. Nunn, £1; Miss Constance Pye, £1; Mrs. Simpson, £1; Miss M. Barker, 10s.; Miss Woolward, 10s.; Miss Bostock, 10s.; the Misses Bittleston, 10s.; Miss Britt, 10s.; Vickers Ltd., Erith (Woodworkers' 12th contrib.), 6s.; Miss Murton, 2s. 6d.; Anon., 2s. 6d.; Miss W. Rake, 2s.; total for week, £51 3s. 7d.; grand total to date, £858 6s. 7d.

Further contributions in cash and kind should be sent to Mrs. Sueter, The Howe, Watlington, Oxon.

The following is a final list of contributors in kind:—Mrs. Smith, Taunton; Miss Handley, Hampstead, N.W.; Miss Hamilton, Sidcup; Miss Crofts, Wimbledon Park; Mrs. Schoenfelde, Catford, S.E.; Miss Lockie, Hove; Mr. Gurney, Pinner; Lady Lloyd (3 cons.), Heullan; Mrs. Rougueth, Eastbourne; Mrs. Rose, Dorking; Mrs. Wylie, Ealing, W.; Mrs. Downs, Wood Green, W.; Mrs. Denant, Windsor; Mrs. Stennior, St. Albans; Miss Pearce, Burton-on-Trent; Mrs. Rose, Sturminster Newton; Miss Blomfield, Hampstead, N.W.; Miss Matthews, Guildford; Mrs. Thomas, Portman Square, W.; Mrs. Simson, Montague Square, W.

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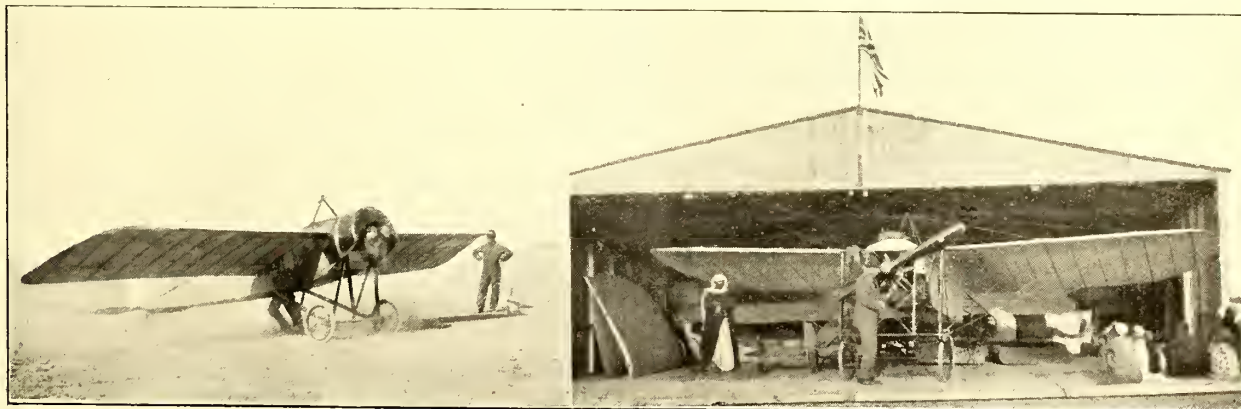
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The men of the R.N.A.S. desire to express their sincere thanks to all who have contributed.



IN EGYPT.—A Reminiscence of Last Winter. On the left, the late M. Marc Pourpe starting. On the right, Captain Watt's Blériot, with Mr. Sam Pierce in charge, and an audience of expectant Arabs.



## A SWEDISH AVIATION OFFICER ON THE WAR.

On February 16th Lieut. C. O. Dahlbeck, of the Swedish Navy, who will be remembered as taking his certificate at Hendon, delivered a lecture in Stockholm before the K.F.U.M. on his observations at the front, especially in connection with the use of aviation in modern warfare. It is curious to note how his ideas, gathered on the spot, agree with those of Mr. Roger Bayons, which appeared last week, and were written before Lieut. Dahlbeck gave his lecture.

The lecturer said that as the result of his studies he could not agree with the general Continental opinion that the stalemate which prevailed in the land warfare was due to the enormous fronts along which operations were being carried on. He wished to suggest that the real reason was to be found in the development of aviation, by which a commander learned of the true direction of his enemy's attacks long before they could be carried out. An example of this was the German movement before Paris. As was now well known, the Germans pivoted their right wing and tried to push it through to the south of Paris. The move was discovered by the reconnaissances of the English Flying Corps, and the Allies, after letting the Germans approach a certain distance in the desired direction, flung their army on him from the north, catching von Kluck in a sack. That the Allies' victory was not as complete as it should have been was due to the German aeroplanes being able to convey warning intelligence to von Kluck in time to partly save himself.

Again, Hindenburg's victory at Tannenberg (when General Samsonoff was killed) was principally due to the brilliant work of the German aviators, who kept the German commander well informed so that he was able to catch the Russians before they had emerged from amongst the lakes.

Lieut. Dahlbeck then discussed the part played by airships in the war, and came to the conclusion that the war had practically killed the airship. In Belgium the Germans had used Zeppelins for both day and night attacks, but their use had proved so little, and the damage they had been able to cause was so small, that they had given up employing them on land. For certain reasons they had continued to use them at sea, and they had taken part in the raids on Grimsby and Scarborough. The results of their employment had, however, been considered very disappointing, especially in comparison with the immense apparatus which had to be set in motion in connection with them. Military opinion in Germany was, on the other hand, highly in favour of aeroplanes, which had had considerable success.

The weapons used against planes consisted almost entirely of rifles, machine-guns, and anti-aircraft guns. The two former had not proved themselves very dangerous, for unless the shot was lucky enough to hit either the flier, the benzine-tank, or the motor, no serious damage was occasioned. For example, there was one occasion when a machine was hit by no less than 80 bullets, but got back to its base practically whole-skinned. Anti-aircraft guns were, however, quite another thing. They discharged shrapnel shell, and the great mass of shrapnel bullets hitting, for example, one of the wings could cause the greatest damage to the machine.

As regards what he knew of the aviation in the different armies in the field, the Germans preferred biplanes making from 120-140 kilometres per hour. The machines are grouped in squadrons of twelve. At the beginning of the war the French did not shine in aviation as much as had been expected, this being due to the lack of organisation; and even though their pilots were the most expert, they had not been able to get as good military results as the English and Germans.

Both the English naval and military flying services had shown themselves remarkably well organised. They were divided into squadrons of twelve planes, with sub-squadrons of four. The English had established air stations all over their own coasts and in Northern France, and it was thanks to the clever situations of these stations that the damaging raids on the German naval base at Cuxhaven and on the submarine base at Ostend had been so successfully carried out.

The offensive weapons carried by aviators mostly consisted of carbines and revolvers, which necessitated approaching the enemy very closely before they could be used. The French had, however, a number of squadrons of Voisin planes carrying

machine-guns. These were very effective, but resulted in the plane being very heavy. The principal weapon used by Germany and the Allies was the bomb. This was of different kinds. It was, of course, easy to handle, but, considering everything, had not shown itself capable of doing very serious damage against fortifications.

The Allies had done great damage, physical and moral, to the German infantry by the use of darts. These were dropped on marching columns from a good height and in great number with great effect. [N.B.—For those who disbelieve in darts. This was said by an officer who knew whereof he spoke.—Ed.]

As a guide to artillery-fire the aeroplane had proved itself of enormous value. The aeroplane hovered over the subject of artillery attack and dropped smoke-balls indicating the effect of the fire.

It was, however, in reconnaissance that the greatest work of aviators had been done. It was interesting to note that, as the war developed and troops got more accustomed to taking cover and means of defence against aircraft improved, reconnaissance by aircraft was less successful. Aviators on land had now to rise to 2,400 metres to be in safety. On sea the matter was otherwise. It had to be remembered that 1,000 metres up an observer could see 120 kilometres away.—A. M. P.

### A Real Safeguard.

The importance to pilots on active service of goggles which cannot be shattered by a blow is so great that one may perhaps be forgiven for mentioning a fatal accident in connection with what amounts to a trade testimonial. The writer has recently seen a pair of Triplex Safety Glass goggles, which were worn by a young officer who was killed in an aeroplane accident, his face coming in contact with the instrument board. The frames are bent and twisted, but the glasses have not broken away at any point, though cracked all over till they look exactly as if they were made of frosted glass.

Another pair of Triplex Glasses, which have been worn for three months by an officer on active service, were cracked in an accident after the first six weeks, but were still used, till the fabric and frames simply parted company through being worn out.

Nearly all pilots and motorists on active service know of cases in which people have had their faces cut or their eyes damaged through splinters from the machine, or from shells, or stones from the road, breaking their goggles, and, therefore, it is one's duty to make known the reliability of the Triplex Glasses, which may be had from the Triplex Safety Glass Co., of 1, Albemarle Street, Piccadilly, W.

### An Aid to Business.

A new and enlarged edition of "Reorganisation and Costings," a book for manufacturers and merchants, by Harvey Preen, F.C.A. (Publishers, Simpkin Marshall and Co. 2s. 6d. net), which was first published three or four years ago, and met with a large sale, has just been produced. The object of this work is to point the way to increased profits by internal reorganisation, the elimination of waste, proper testing systems of raw materials, useful interior factory accounting, and by the introduction of efficient costings. The value of percentage comparisons in regard to purchases, wages, and general costs is fully explained. There is an excellent chapter on banking, auditing, and the value of budgets in business. Diseases of balance-sheets and profit and loss accounts are fully explained. Much valuable information is given as to the true and correct manner of costing goods, both generally and particularly. Altogether it should be a valuable acquisition to aeroplane manufacturers who have not much business training, especially those from whom unpleasant people called shareholders desire balance-sheets.

### Addresses.

As there seems to be some doubt as to the correct address of the different branches of the Flying Services at home, it may be well to note that letters relating to the Royal Flying Corps, unless addressed to individual members thereof, should be addressed to the Director-General of Military Aeronautics, The War Office, Whitehall, London, S.W. Letters relating to the Royal Naval Air Service should be addressed to the Director of the Air Department, the Admiralty, Whitehall, S.W.

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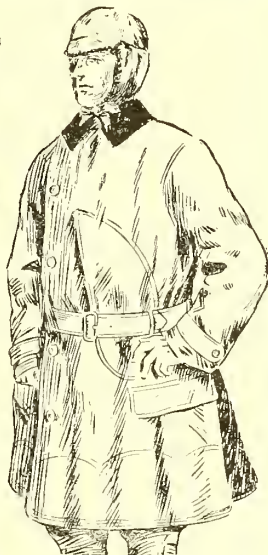
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### A Promising New Machine.

White and Thompson, Ltd., of Bognor, have recently completed a landgoing tractor biplane on most promising lines. She is a two-seater, and is fitted with a 70-h.p. Renault. The fuselage, of three-ply timber, was built by Saunders, of Cowes. In preliminary tests, in very bad weather, the machine is said to have reached a speed equal to that of the best two-seaters with 80-h.p. Gnomses, in a side wind. One gathers that Mr. Beadle was responsible for the design of the machine, and it seems as if his designs have made good.

### Head Resistance.

One often has enquiries as to the efficiency, head resistance, etc., of some machine flying at the moment. The following is a method by which, with some essential particulars and little difficulty, these figures may be obtained approximately.

The necessary particulars are:—*P*, the horse-power of the engine; *w*, the weight of the machine in lbs. ready for flight; *K*, the lifting co-efficient of the planes, or *v*, the speed in m.p.h.; *A*, the wing surface; and *a*, the angle of incidence (expressed as a fraction).

*P*, *w*, *A*, and *a* can all be measured directly with the machine. *v* cannot be quite so easily obtained, and unless there are accurate figures extant, it is best to assume  $K = 1.00$  which is a fair value.

The figures required are, then, *v*; *b*, the gliding angle, and *R*, the "equivalent normal surface," which represents the head resistance—i.e., the area of the square flat plate which would have a resistance equal to the useless head resistance.

I propose to give, first, non-mathematical instructions for finding these quantities, and after, for those who care to read, the corresponding formulæ.

We assume, then, that we know power, weight, *K*, surface, and angle of incidence.

Multiply together *K*, surface, and angle of incidence, and divide weight by their product. Extract the square root, and the result is speed.

Now multiply power by 250, divide by weight, and divide the result by speed. The result is gliding angle.

Lastly, subtract the angle of incidence from the gliding angle, multiply the difference by 1,000 times the weight. Divide by three, by the speed, and by the speed again. The result is the head resistance area.

Putting the operations in mathematical form, we have: given *P*, *w*, *A*, *K*, and *a*—

$$v = \frac{\sqrt{w}}{K A a} \quad \dots \quad \dots \quad \dots \quad (1)$$

$$b = \frac{250 P}{w v} \quad \dots \quad \dots \quad \dots \quad (2)$$

$$R = \frac{1000 w (b a) -}{3 v^2} \quad \dots \quad \dots \quad \dots \quad (3)$$

P. K. T.

### Practical Lessons from Models.

The following letter shows that lessons of value to users of aeroplanes can still be learnt from models:—

"Sir,—I notice in THE AEROPLANE your remarks on 'Anchoring Aeroplanes in a Wind.' Might I suggest as a result of my experience with models that the safest way would be to anchor them broadside on. I don't know whether it would be practicable to fasten them by one wing-tip only, but if not, perhaps an additional stay wire to the fuselage about mid-way between the main plane and the tail would make the machine secure. At any rate I should be pleased if you could induce someone to try this dodge and let me know the result. I feel confident that an aeroplane fixed the way I suggest would be less liable to damage than if fixed either head or tail to wind.

"Re 'Pusher Nacelles.' I am surprised to read that pusher machines are always 'so much slower' than tractors. This should certainly not be the case, and if this result is due to the flat end of the nacelle, then all I can say is it is high time the shape was altered. I estimate roughly from observation of models in flight that 'pushers' are at least 10 per cent. faster than tractors, and for this reason a propeller of slightly bigger pitch can be used with the same power as in a tractor screw of same diameter and width of blade.

[Herein is something for designers to read, mark, learn, and inwardly digest.—Ed.]

"Again, re Propellers. I have found that in model flying cambered blades give greater efficiency than blades with flat faces, also that still greater efficiency is obtained if the camber gradually increases from the tip to the boss. (The camber at the tip is practically nil.) I attribute this to the similarity between a propeller blade and an aerofoil, the slower the air speed the greater the camber which may be used to advantage. I take it, however, as a matter of course that a full-sized propeller would be much too weak at a vital point to have much camber, if any at all, near the boss, but so far as model propellers are concerned they are always strong enough near the boss to stand ordinary flight strains unless they are made as thin as paper. What seems to me peculiar is the fact that model propellers have to be driven at practically the same speed as full-sized ones, viz., 1,200 revs., to obtain the best results.

"As soon as the days lengthen a bit, numbers of this Club will be carrying out some experiments with propellers, planes of various aspect ratios, angles of incidence, and cambers, and measuring the air speed of models in actual flight, and any hints given in your paper on lines for experimentation will be gladly taken up and followed as far as practicable. A small club like ours cannot conduct experiments quite on N. P. L. lines, but I feel sure some useful results will be obtained on less elaborate lines. (Signed) W. E. EVANS, Hon. Sec., The Paddington and Districts Aero Club."

### Southampton District.

A Sopwith-Sunbeam tractor was busy on two days last week. It came out on Tuesday afternoon, and, with two on board, made a flight over Southampton at a noteworthy height for a large machine. During the flight the tide had gone out, and, when the Sopwith returned, about 15 ft. of mud separated the slipway from the edge of the water. However, the pilot opened out and slid over the mud quite comfortably. The tests were continued on Thursday. The flight terminated with quite an exciting dive from a great height.

Much general flying has also been done.

A new and improved Curtiss type machine is nearing completion in the neighbourhood.

### School and Weather Reports.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
Hendon ...	Windy	Fine	Very Windy	Fair	Windy	Gale	Fine Windy
East Coast ...	Fine, a.m. Wet p.m.	Very Windy	Windy	Fine	Fine	Fine	Very Windy
South Coast ...	Fine but Dull	Fine	Fine	Dull	Fine but Windy	Fine but Windy	Fine but Windy
Lake District	Windy	Gale	Rain	Rain	Rain	Rain	Windy

**Hendon.**—AT THE GRAHAME-WHITE SCHOOL.—Instructors: Messrs. Manton, Russell and Winter. Pupils with instr.: Prob. Flt. Sub-Lieuts. Dunn, Feeney, Greer, Hards, Hood, Jackson and Vernon. Strts. alone: Prob. Flt. Sub-Lieuts. Ferrand, Morrison and Dunn. 8's or circs.: Prob. Flt. Sub-Lieuts. Irving, Morrison and Dunn. Machines: Four Grahame-White School machines.

**AT THE BEATTY SCHOOL.**—Instructors: Messrs. Geo. W. Beatty, W. Roche-Kelly and C. Prodger. Pupils with instr.: Messrs. Ormsby, Gerrit Forbes, H. H. Bright, F. R. Laver, J. H. Vickers, B. B. Lewis and J. L. Allcock. Machines: Wright biplanes fitted with dual controls.

**AT THE RUFFY-BAUMANN SCHOOL.**—Instructors: Messrs. E. Baumann and the James Brothers. Pupils with instructor on 60 Caudron: Messrs. E. Roobaert and B. C. Bell (new pupils). Mr. Kenworthy (18 mins.), and Mr. Hydon (21) alone. Machines: 60 and 45 Caudron biplanes.

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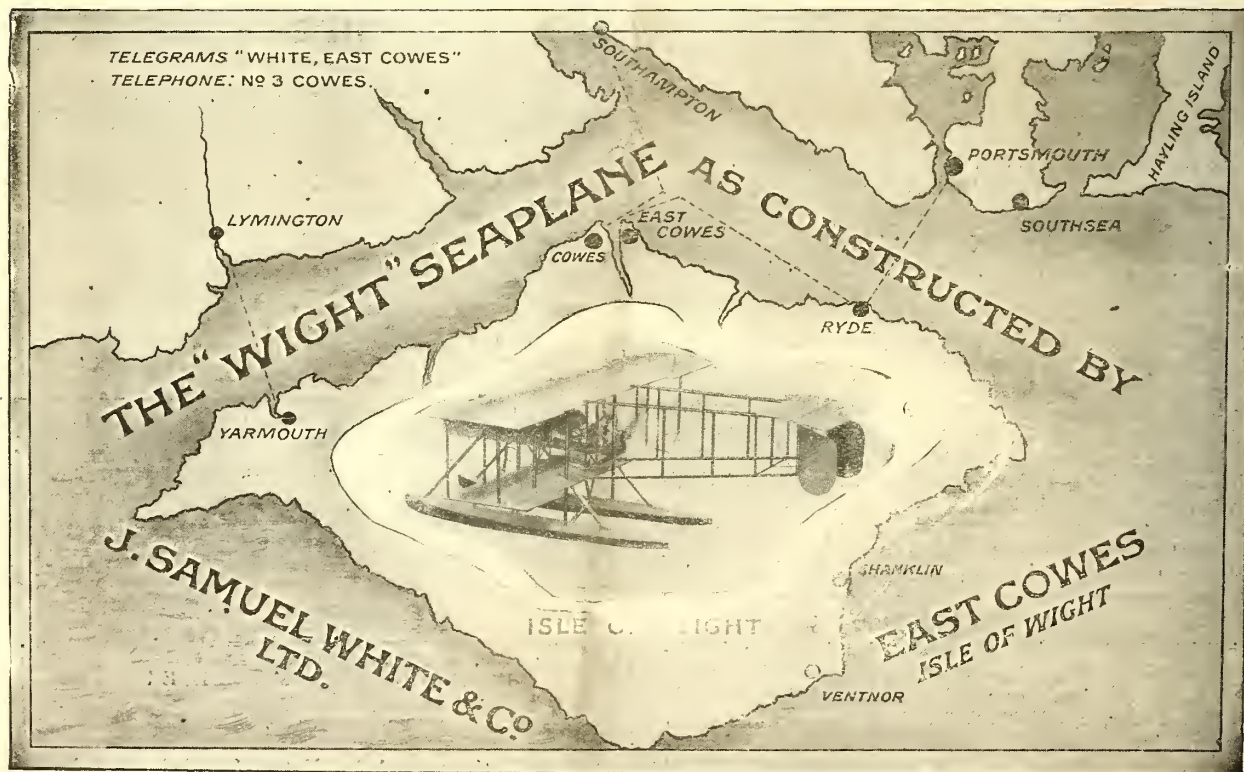
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# THE AEROPLANE

*Edited by C. G. GREY. ("Aero-Amateur")*



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No. 11

## TREED.



An optical, or rather a photographic illusion, showing a Vickers gun-carrier apparently stuck in a tree. As a matter of fact the machine was flying close over the top.



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## Active Service and Some Other Things.

When the Royal Flying Corps flew to France at the outbreak of war one rather received the impression that they went off in something of the spirit of a forlorn hope. At any rate, despite their all being quite bright and cheerful, most of the pilots adopted rather a *morituri te salutant* attitude towards life in general, and though none of them showed any overt evidence that he was seriously concerned about what the Irish call "making his soul," many of them distinctly said, "Let us eat, drink and be merry, for to-morrow we die." One or two officers of my acquaintance in one squadron in particular were fully convinced that the whole squadron would be wiped out in the first week of serious work, the luckiest ones being those who escaped death by being merely wounded or moderately smashed.

Now, after seven months of war, during which the pilots must have covered tens of thousands of miles over continuous fire, besides odd flying merely as a means of locomotion, that squadron has, I believe, lost two pilots killed by accident and none by gun or rifle fire, and only one or two wounded or prisoners. Other squadrons which have done an equal amount of work have been no less fortunate, and some, with perhaps less flying to their credit, have been even luckier.

The Royal Naval Air Service has had about equal luck, for though the number of Naval pilots who have flown over gun-fire is less, the miles covered by the R.N.A.S. on coast-patrols, Channel patrols, and in flying over the North Sea generally, must be nearly equal to the R.F.C. mileage, and though machines have come down in the open and have drifted for hours before being picked up, and though many seaplanes have been wrecked in one way or another, the pilots have escaped death in an extraordinary way.

### French Ill-Fortune.

An official French note published last week lamented the number of casualties in the French Aéronautique Militaire, which points to the French having lost a much higher percentage than our flying Services have. We have lost several valuable officers, whose deaths deeply affect many of us who have been closely connected with naval and military aviation, but when one looks at the figures one cannot avoid a sense of satisfaction that the proportion of loss is so very small. The Services themselves evidently have the same feeling, for one recalls Dr. Glazebrook's remark about a young friend of his who wrote that he really felt that he ought to go back to his regiment, because it seemed to him unfair that he should be flying in comfort and safety while the other officers of his battalion were having such a strenuous time in the trenches. In one or two cases officers seconded to the R.F.C. are now about the only unwounded officers of their line units.

Just why our aviators should be so fortunate is not very obvious, but it appears primarily to be due to their being better mounted than the French, so that they can keep at a safer height, and can fly quicker and so are harder to hit.

Secondly—though perhaps this is really the prime reason—our aeroplanes, like our horses, are better cared for. The R.F.C. mechanics have been splendid.

They have toiled night and day to keep their officers' machines in perfect order and to keep the engines in tune. As a result we have had only one known case of a machine actually breaking in the air, and that was of French make, and despite the enormous mileage the cases of engine breakdown have been few and far between.

Thirdly, our machines are undoubtedly better constructed, for when he likes the British workman can do the best work in the world, and however much one may disapprove of the methods of the Royal Aircraft Factory officials in some of their dealings, there is no denying that competition with that establishment has kept the aeroplane manufacturers' noses on the grindstone, with corresponding benefit to the Services. Even as it is, we have some of the best aeroplanes in the world, but if competition of all kinds, both in construction and in actual flying, had been officially encouraged in the past we should by now have been far ahead of any other country, instead of being just a little more than able to hold our own.

Also, the enlightened policy lately pursued by the War Office, and the good work done by the Aeronautical Inspection Department, has resulted in a very distinct improvement in the quality of workmanship all round, and in the production of strouger and safer machines.

### Standing Punishment.

Perhaps the most surprising thing we have learned from actual experience of war is the amount of punishment an aeroplane can stand without collapsing. When one looks into the construction of a flying machine it strikes one that the least thing in the way of gun or rifle fire would knock it to pieces, yet one hears of machines coming home safely with planes consisting apparently of more holes than fabric. Others come in cheerfully minus ailerons, or struts. Shells burst under tails and stand machines on their heads, but the pilots do not seem to worry much. In fact, aviators in general seem to bear charmed lives.

Probably the real reason is that when a man standing in a trench shows himself several dozens of rifles are fired at him, and the bullets all miss him by inches, and there is no record of how near they went, whereas in an aeroplane every bullet within fifteen feet of the body of the machine, and within the area of the wings and tail, leaves its mark. The most astonishing thing is that none of them ever seem to hit a really vital part of the machine itself and smash up a main wiring plate at the base of a strut, or something of that sort.

### The Age-Limit Question.

With so many narrow escapes before their eyes it is not at all surprising that some of the younger pilots become reckless, and that some of the older ones become confirmed fatalists. Of the two attitudes of mind the latter is preferable, for a man who is a fatalist can go on flying, apparently, till he gets killed or dies of old age—the odds are in favour of old age—whereas a reckless youngster is liable to lose his nerve entirely after one bad smash.

Which gives one to wonder at times whether the



authorities are entirely wise in selecting very young men for training as pilots at Government expense. It is true that young eyes and hands are probably easier to train, but it is still more true that an old head is certain to have better judgment, and that an older man has more staying power. A boy of 20 or so may be a better aerial acrobat, but a man of 30, who has never had any ambition to loop the loop, will stand the hardships of campaign life better, and he will certainly stand long flights day after day very much better.

Among my personal friends who have been flying on active service I notice that some of the youngest have a strained and tired look about their eyes which should not be there at so tender an age, whereas the hardened old sinners of between 30 and 35 are just as cynically cheerful or as cheerfully depressed as they have been ever since I have known them. It is easier to break a young horse's heart than an old one's, and probably the same is true of human nerves. Certainly a fit man of 30 will stand more hardship than a boy of 20, and though he may not be as quick in his actions, it is more than doubtful whether any wonderful quickness is necessary in handling an aeroplane. Judgment is much more valuable, and here the older man scores almost always.

Steeplechase riding and driving racing-cars on the road both need quicker hands than flying, and probably more judgment as well, and in both sports it seems that the men at the top of the tree are much nearer 30 than 20. Personally I should put the minimum age of a Service aviator at 25 and let the maximum age depend on the physical fitness of the applicant, and I venture to commend this point to the consideration of the authorities.

#### Archibald and His Ways.

However, what I originally set out to do was to give a few instances of what narrow escapes actually do happen to Service aviators, with the double object of warning youngsters against unnecessary recklessness, and of demonstrating that while flying on active service is not as free from danger as our small number of casualties seems to prove, it is possible to survive incidents which ought to have ended in sudden death.

Several pilots have recently remarked that the shooting of the German "Archibalds" has improved very much of late, which may be due either to real improvement, due to continual practice, or to the increasing number of high-angle guns, or merely because the bad weather compels our pilots to fly lower to see below the clouds. Also, the clouds themselves, as mentioned some time ago, are useful to the gunners, who can get the vertical range exactly by bursting their trial shells just under the clouds, and then waiting for an aeroplane to come through. In the first two months of the war there was hardly ever a cloud to be seen, and the observers could see perfectly from heights of well over 6,000 feet.

The more experienced pilots now know all Archibald's habits, and consequently prefer whenever possible to hare along the German lines down wind, and then clear off over to our own territory for the slow beat up against the wind. One can sympathise heartily with the pilot who took up a brave but aerially uneducated senior officer for such a trip some time ago, and at the end of the appointed journey received an intimation that the observer would like to go back slowly over the same ground. The legend has it that the observer stuck out about ten minutes of the return journey at ten miles an hour or so, the machine presenting almost a stationary mark for a whole bunch of star-turn Archibalds, and then signalled to the pilot to sheer off to a safer position, and that when the pilot got him safely home the observer received quite a heart-to-heart lecture from the junior but more experienced officer.

Apropos Archibald, some of the wilier pilots discovered some months ago that he cannot make good shooting against the sun. Consequently, whenever he becomes unpleasantly attentive they try to get between him and the light. An aeroplane at 6,000 feet or so is a small enough mark anyhow, and when the gunner has to aim into the eye of the sun to find it the machine is fairly safe. Young pilots may find the tip useful when they go into action for the first time.

Lately it seems that the R.N.A.S. raids have drawn most of the star gunners and their guns into Belgium, and consequently the R.F.C. patrols are not quite so much worried, for which fact, no doubt, they are duly grateful.

#### The War as an Entertainment.

Also apropos Archibald, I was told the other day of a new and very enthusiastic pilot who went out to Flanders for the first time. He started off gaily from the aircraft base, no end cheered by the idea that he was really "going to see the War," as he put it. He flew along for some miles, very much interested in the scenery, but not seeing anything very exciting, till after a while he remarked to himself, "Where's this War they're talking about? I don't see any War." Then suddenly, a mile or two farther on, the sky became white with the smoke of shrapnel bursting all round him. Bullets began to rip through the planes, and the machine bumped about ominously, whereon, according to his account, he exclaimed, "Lord! There is a War after all, and I believe those chaps on the ground think I'm it." So he sheered off to a calmer atmosphere. Apparently he had wandered right over one of the Germans' pet positions where they had a whole family of Archibalds, which held their fire till this sportsman was right overhead. Incidentally they gave away their precise position, which was just what was wanted.

#### An Overrated Sport.

"Going to see the War" seems to be the pet amusement of aviators and other people who are unfortunately tied by their duties to base camps or Headquarters billets, whenever the said people can contrive some excuse for getting up to the firing line. Certain young aviator friends of mine took such a holiday not very long ago, having borrowed a car with faithful promises that it should on no account be damaged. They went off cheerfully to the firing line and were learning much useful knowledge about the land-going portion of the operations when the German heavy guns began shelling the place they were in. Mindful of their promise about the car, they started back to where they had left it, and as they were walking along a canal a six-inch shell dropped into it not twenty feet from where they were, burst on the bottom, threw up a huge column of water, mud, dead fish, and assorted refuse all over them, and knocked them flat on the road. The leader of the party recovered before the others, and when he was able to sit up and take notice and had made sure that he was not damaged, he saw them beginning to crawl round on their hands and knees, wondering whether they were alive or not—and he said that the first thing that crossed his mind was how angry they would be with him for bringing them out to see the War, and getting them in such a filthy mess. One of them afterwards expressed the opinion that War considered as a sport was over-rated. As a matter of fact, it is just as well that Service aviators should see something of the war on the ground as well as from aloft, for it extends their point of view and is highly educative.

#### Some "Near Things."

Apropos "near things" in general, it will be remembered that the Admiralty announced last week that one of the aeroplanes at the Dardanelles had been hit in 28

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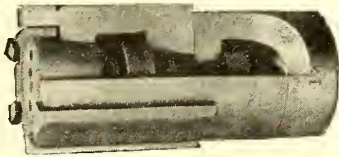
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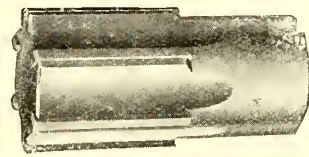
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places and another in 8 places. One R.N.A.S. pilot, when he saw the announcement, remarked, without any intention of bragging, "But why make a fuss about that? My machine has been hit ninety times at one go."

It is said to be on record that one of the R.F.C. machines, a Farman I think, came down safely after a shell had burst directly under it. Over 200 holes were counted in the fabric, planes, tail, and nacelle all being riddled. As one officer said, "the thing was simply in ribbons, and looked like a moulting chicken."

Of course, when one is counting holes in a machine one must remember that one bullet may make as many as six holes; for example, it may go through the lower plane close to the fuselage making a hole in the lower and upper surfaces, then through the two sides, or a side and the top of the fuselage, and then through both surfaces of the upper plane on the other side.

As an example of what a bullet can do in the way of missing things, one the other day came through the bottom of the fuselage of a machine, ploughed up the observer's leg, cutting his puttees without damaging him, went into his leather coat and out again, and then through the upper plane.

In another case a pilot, who has not been flying for some time, was on the ground when a rifle bullet hit him on the head, ploughed a neat groove along the bone at the side of his skull, and knocked him over backwards into a common or domestic slop-bucket. He was, apparently, much more angry with the bucket than with the bullet, and is at present progressing favourably, recovering rapidly both his health and dignity, with his head in a species of night-cap.

#### **Keeping One's Head.**

The great thing for a pilot to do is to keep his head when in a tight corner. For example, one pilot told me some time ago how a chunk of shell carried away an interplane strut and knocked a piece out of the wing near the strut big enough to put one's head through. Like a wise man he came down gliding as slowly as possible in a carefully banked spiral, with the damaged wing inside the circle, so as to decrease the lift on that wing and increase it on the undamaged side. If he had turned the other way, or had come down fast, the probability is that the increased speed would either have burst the fabric altogether or have broken the unsupported spar.

In yet another case a shell burst right underneath a machine and the engine stopped firing suddenly. The pilot felt that the engine was all right as it continued to spin without vibrating, so he concluded that a tank had been hit and the petrol supply to the engine had

been cut off. Fortunately the machine had two tanks, with separate pipes to the engine, and the other had not been hit, so by turning on the petrol from the second tank he was able to start up the engine again and get home.

It is something of a problem to know whether to start up or not under such circumstances, for with the machine smothered in petrol from the punctured tank there is always the danger of fire—the worst of all dangers to aviators.

#### **The Fire Danger.**

In the case of a machine with two tanks, one between the pilot and passenger and one forward, if the back tank is hit and the machine is a tractor with a Gnome engine it is fairly safe to switch on again, but if the engine is a Renault or any other with long exhaust pipes carried underneath the fuselage there is the danger of a misfire in the engine, as it is starting up, squirting a jet of flame out of the end of the pipe and setting the petrol alight.

Which suggests that it might be safer to carry the pipes upwards over the upper plane, streamlining them in with the fuselage-struts. It ought to be possible to do so in a tractor of the B.E. type.

In a tractor with a Gnome, if the front tank is hit, the vapour may be sucked into the passenger's cock-pit by the back-draught from the cowl, and if a valve sticks up and causes a pop back into the carburettor—which in many machines is right between the passenger's feet—there may be a fire from that cause. In some machines safety against such a fire is secured by cutting the carburettor right off from the cock-pit with aluminium plate, but this is not universal practice.

Curiously enough, no one seems to have adopted the simple expedient of casing the whole carburettor in a globe of gauze and making it into a kind of Davy lamp.

In all "pushers" there is the continual danger of petrol from a punctured tank being blown back over the engine while it is still running. There seems to be no safeguard possible against this, except the development of the heavy-oil Diesel-type engine, about which no one seems to be troubling. One designer of aeroplanes recommends commandeering a Diesel engineer, an aero-motor engineer, and a high-class metallurgist, and locking them up together in a padded drawing office till they evolve a workable design for a Diesel-type aero-engine. The idea has merit.

#### **Simple Safeguards.**

All these dangers of fire are equally great from broken petrol-pipes or the jarring loose of couplings when not on active service at all. The only practical

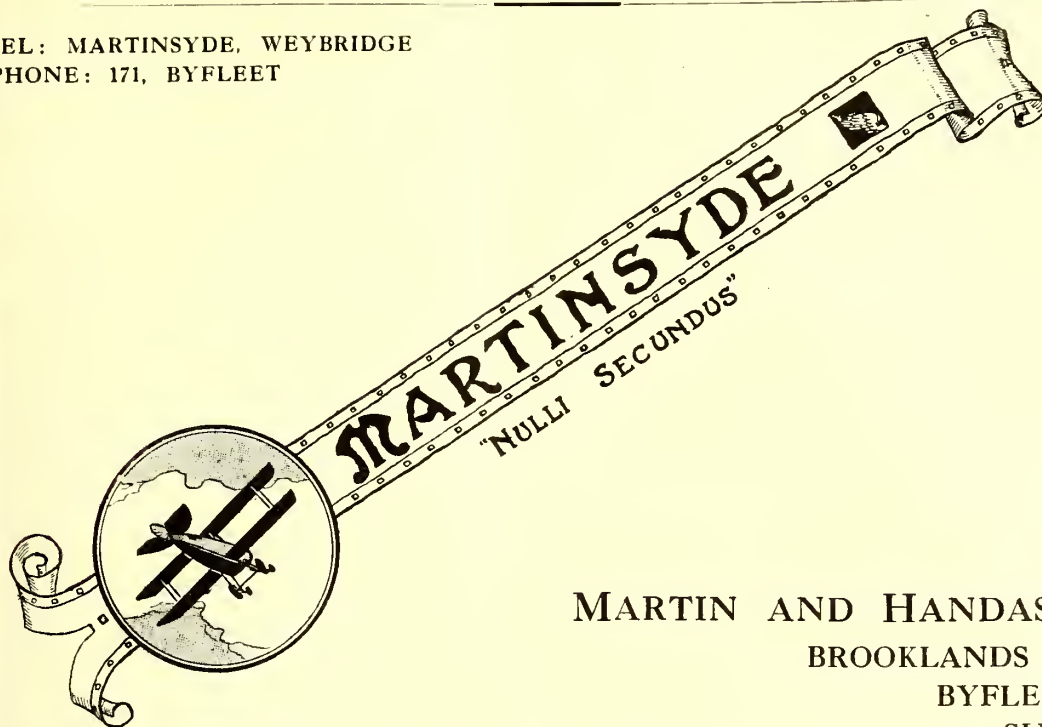


*Photograph by F. N. Birkett, Shepherd's Bush*

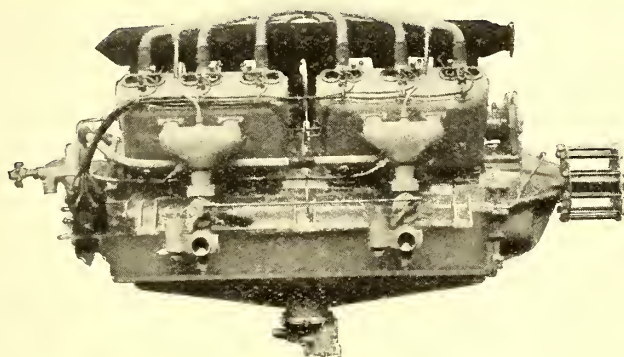
Air Mechanics of the South African Flying Corps, recently transferred to the Union Forces from the Royal Naval Air Service. It will be noted that the uniform approximates to that of the Royal Flying Corps.

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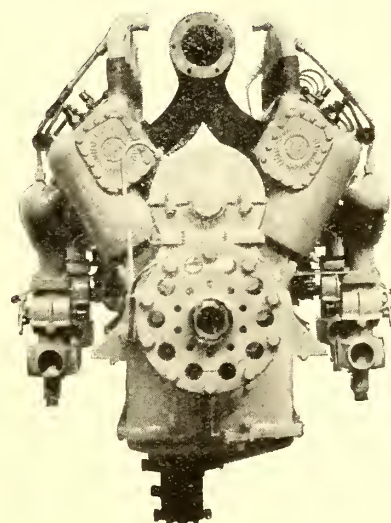


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"gadget" yet produced to prevent back-firing into carburettors from setting machines alight was that invented some time ago by Mr. Holt-Thomas, but, promising and simple as it was, nothing seems to have been heard of it lately.

The most sensible thing in all cases of petrol escape seems to be to shut off the engine as soon as it is discovered, let the tank empty itself thoroughly, then dive hard so that the draught will evaporate the loose petrol, turning the machine meanwhile in different directions so as to clear any "pockets" of vapour which may have formed in odd corners of the machine, and then switch over to the spare tank, start up, and trust to luck. Later on, when aeroplanes are more sensibly designed, we shall have properly armoured tanks with drains to take leakages clear of the machine, and shall be free of most of this danger.

### Joining the Flying Services.

A number of letters are received at this office every week from young men who are anxious to obtain temporary or permanent commissions in the Royal Naval Air Service or the Royal Flying Corps. In the majority of cases the writers are sportsmen who hold commissions or have enlisted in line battalions or in other military units, and some in the Royal Naval Division, and who hope that there is a possibility of their being transferred to one or other of the Flying Services. In other cases they are men who have returned from abroad or from the Colonies to join up in some capacity or other. In every case they want to know what their chances are of being accepted.

The question is a most difficult one to answer, and it is doubtful whether the officers in the particular departments of the Admiralty and War Office devoted to these particular purposes could answer such questions off-hand, even if they were permitted to do so. The trouble is that in both Services there is an enormous waiting list of applicants who have actually been examined and passed as being personally suitable to hold the King's commission, and if one judged simply by the length of that waiting list one would be tempted to say that in future no applicants need apply.

On the other hand, there are very good reasons why a man of the right kind should apply, and why he really has a chance of ultimately flying on active service. In the first place, the periodical sudden expansions of both the Flying Services may at any moment absorb so many officers as to reduce the length of the waiting lists very considerably. Secondly, it might happen that a streak of bad luck would bring a number of casualties which would leave vacancies to be filled. Thirdly, no one can tell by looking at a man whether he is likely to make a good pilot or not, no matter how suitable he may be personally and socially to be an officer, and therefore it may happen that after the majority of the people whose names are on the waiting list have been appointed on probation it will be found that hardly any of them have the makings of a sufficiently good flier to be useful on active service.

As a matter of fact, the number of probationary pilots who are rejected on that account alone is very high indeed. Many of them are most estimable young men, who would probably with extended training become quite good plain fliers; but, owing to the number of applicants, both Services can afford to pick and choose, and only actually appoint those who give distinct promise of being above the ordinary as pilots. It is quite probable that the Services are losing some very excellent fliers in this way, for some of those seniors who are not only the best officers but the best pilots were in the days of their pupilage apparently mutton-fisted, club-footed, and thick-headed all at once, but suddenly developed into high-class pilots just when everybody had given them up as hopeless. On the other hand, there are cases in which the men have started exceedingly well, and have simply gone to pieces at the stage between taking their certificates and becoming complete Service aviators.

Still, averaging it all round, the man who shows distinct aptitude as a pilot at the start is much more likely to be a good flier afterwards, which is one very good reason for those who can afford it to join a civilian school and learn to fly while

### A Twin-Engine Advantage.

The twin-engine type of machine has distinct advantages in this respect, because the main petrol supply will be in the body of the machine, well removed from the engines, so that a petrol fire in the engine compartment will be confined to as much petrol as may be in the carburettor, and the streamlining of the engines will presumably be of metal, so that the fire will have nothing to feed on. This, I believe, is a new argument in favour of the twin-engine type, which in the larger sizes of machines is the only possible line of development.

Much more might be written on this subject, but probably my long-suffering readers have had a sufficient variety of apparently disconnected ideas for one week, so I merely advise them, in the words of the inimitable Fanny Fields, to "Tink it ovah."—C. G. G.

they are on the waiting list for the Services, for when their turn comes and they are sent to one of the Service schools they already know at any rate the rudiments of the game.

Moreover, as the existing civilian schools operating at aerodromes are under official supervision, pupils who are shaping well are quite likely to attract the attention of Service fliers, and more than one case has happened in which a "star turn" pupil has received his appointment on the strength of his flying as a civilian, although he has actually been some considerable way down the waiting list.

It is therefore well worth while for any man who is really keen on flying to apply for a commission in whichever Service he desires to join, provided he is convinced, without being conceited, that his education and upbringing are such as to fit him for commissioned rank, though apparently this question is not so important as it used to be, judging by some appointments. Of course, if he can produce any special qualifications, such as previous experience of active service or personal recommendation from senior officers, so much the better for him.

Incidentally, those who are already attached to either Service in subordinate positions must recollect that in applying for transfer to either of the Flying Services they must send their applications through their own commanding officers.

### The R.N.A.S. Comforts Fund.

The number and amount of the contributions received this week seem to have been affected by the temporary improvement in the weather. One hopes that readers will remember that the weather is as fickle as fortune, and that there are still many rough days and nights to be faced by the men of the Royal Naval Air Service.

The following cash contributions are acknowledged this week:—Paymaster-in-Chief A. Cummins, R.N., £3 3s.; Dr. Sunderland, £2 2s.; R. A. F. War Distress Relief Fund (5th contribution), £1 10s.; (6th contribution), £1 10s.; Mr. Gordon and Friends (Nigeria), £1 2s. 6d.; M. J. Blain, £1; Miss Gow, 10s.; Mr. d'Evelyn, 10s.; Vickers, Ltd., Woodworkers, Aeroplane Department (13th contribution), 6s.; Miss Smyth, 5s.; Mann and Grimmer (employees' 16th contribution), 5s.; total for week, £12 3s. 6d.; grand total to date, £870 10s. 1d.

Further contributions in cash and kind should be sent to Mrs. Sueter, The Howe, Howe Hill, Watlington, Oxon.

### The Royal Aero Club Annual General Meeting.

The annual general meeting of the members of the Royal Aero Club of the United Kingdom will be held on Tuesday next, March 23rd, 1915, at 5 o'clock, at 166, Piccadilly, W.

In accordance with the rules, the Committee shall consist of eighteen members. Members are elected to serve for two years, half the Committee retiring annually. Retiring members are eligible for re-election.

The retiring members of the Committee are:—Griffith Brewer, Ernest C. Bucknall, John D. Dunville, Col. H. C. L. Holden, C.B., F.R.S., Prof. A. K. Huntington, Flight-Commander F. K. McClean, R.N.A.S., Alec Ogilvie, Mervyn O'Gorman, C.B., C. F. Pollock.

All nine of these Committeemen have been renominated, and no new name has been nominated, so that there will be no ballot, and the candidates will all be re-elected unopposed. Under all the circumstances at the present time it is the best thing that could have happened.



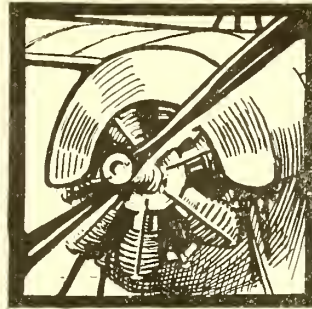
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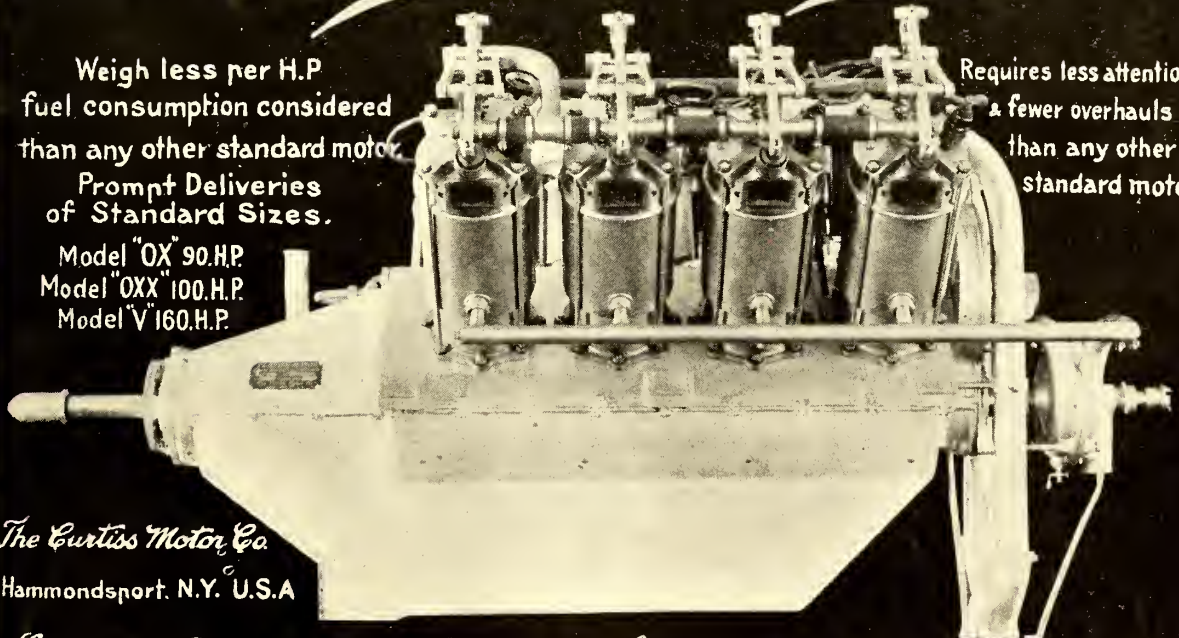


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## Naval and Military Aeronautics.

### GREAT BRITAIN.

From the "London Gazette," March 9th, 1915.

ADMIRALTY, MARCH 5TH.

ROYAL NAVAL AIR SERVICE.—With reference to the notice which appeared in the "London Gazette" of Friday, February 26th, 1915, the seniority of Flight Sub-Lieutenant H. J. Batchelor should be November 15th, 1914, and not as therein stated.

The name of George Fred Bresse should be George Fred Breese.

WAR OFFICE, MARCH 9TH.

REGULAR FORCES.—The undermentioned non-commissioned officer to be second lieutenant for service in the field:—

INFANTRY.—THE KING'S OWN (ROYAL LANCASTER REGIMENT).—Corporal W. H. Nixon, from Royal Flying Corps. Dated February 14th, 1915.

ESTABLISHMENTS.—ROYAL FLYING CORPS.—The undermentioned appointments are made:—

CENTRAL FLYING SCHOOL.—Assistant Commandant (graded as Wing Commander)—Captain (temporary Major) D. Le G. Pitcher, 39th King George's Own Central India Horse, Indian Army, from a squadron commander, and to be temporary lieutenant-colonel, vice Major T. I. Webb-Bowen, Bedfordshire Regiment. Dated March 6th, 1915.

MILITARY WING.—Squadron Commanders—Lieutenant (temporary Captain) G. I. Carmichael, Royal Artillery, a flight commander, and to be temporary major. Dated March 2nd, 1915. Captain U. J. D. Bourke, Oxfordshire and Buckinghamshire Light Infantry, a flight commander, and to be a temporary major. Dated March 2nd, 1915. Major T. I. Webb-Bowen, Bedfordshire Regiment, from assistant commandant Central Flying School. Dated March 6th, 1915.

Flying Officer—Lieutenant C. W. Anstey, South Wales Borderers, and to be seconded. Dated February 26th, 1915.

SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—H. T. Musker to be second lieutenant (on probation). Dated March 10th, 1915.

A Supplement to the "London Gazette" of March 9th, published on March 10th, contains the following military appointments:—

WAR OFFICE, MARCH 10TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—The undermentioned appointment is made:—

Flight Commander—Captain J. C. Halahan, Reserve of Officers, from a flying officer. Dated March 1st, 1915.

SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—The undermentioned to be second lieutenants (on probation):—Dated February 20th, 1915: A. R. H. Browne and R. E. A. W. Hughes-Chamberlain. A. M. Cott. Dated March 4th, 1915.

\* \* \*

A Second Supplement to the "London Gazette" of March 9th, published on March 11th, contains the following military appointments:—

WAR OFFICE, MARCH 11TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—The undermentioned appointments are made:—

Flying Officers—Dated February 19th, 1915: Lieutenant J. E. A. Baldwin, 8th (King's Royal Irish) Hussars, and to be seconded; Second Lieutenant E. D. Horsfall, 9th (Service) Battalion Rifle Brigade (Prince Consort's Own), and to be transferred to the General List, New Armies; and Second Lieutenant C. C. Wigram, Special Reserve.

SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—The undermentioned to be second lieutenants (on probation):—

H. V. Champion de Crespigny, dated February 26th, 1915, and R. H. S. Mealing, dated February 27th, 1915.

From the "London Gazette," March 12th, 1915.

ADMIRALTY, MARCH 6TH.

ROYAL NAVAL AIR SERVICE.—W. A. Burns to be flight lieutenant. Dated February 27th, 1915.

WAR OFFICE, MARCH 12TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—The undermentioned flight commanders are graded as squadron commanders whilst holding appointments as instructors at the Central Flying School: Captain F. F. Waldron, 19th (Queen Alexandra's Own Royal) Hussars. Dated October 17th, 1914. Lieutenant (temporary Captain) A. H. L. Soames, 3rd (King's Own) Hussars. Dated February 9th, 1915.

The undermentioned appointments are made:—Flying Officers—Second Lieutenant J. J. Hammond, Special Reserve. Dated January 29th, 1915. Second Lieutenant F. W. Godden, Special Reserve. Dated February 23rd, 1915.

INSPECTION STAFF.—The undermentioned temporary appointment is made:—Assistant Inspector—Major A. S. P. McGhee, Royal Artillery, and to be seconded. Dated February 1st, 1915.

SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Temporary Second Lieutenant R. B. Bourdillon to be second lieutenant (on probation). Dated February 12th, 1915.

\* \* \*

A Third Supplement to the "London Gazette" of March 12th, published on March 15th, contains the following military appointments:—

WAR OFFICE, MARCH 15TH.

REGULAR FORCES.—COMMANDS AND STAFF.—The undermentioned appointment is made:—

STAFF CAPTAIN.—Dated March 3rd, 1915: Captain R. T. Snowden-Smith, Army Service Corps.

SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—The undermentioned to be second lieutenants (on probation): W. E. Collison. Dated Feb. 22nd, 1915. F. L. Scholte. Dated March 8th, 1915.

### NAVAL.

The following appointment was announced at the Admiralty on March 12th:—

Temporary Surgeon F. L. Duckworth, to the "President," additional, for Kingsnorth Air Station, to date March 31st.—[March 13th?—Ed.]

\* \* \*

The following appointments, etc., were announced from the Admiralty on March 13th:—

Temporary Surgeon Kenneth Wolferstan, to the "President," additional, for Eastchurch Air Station, to date March 12th, 1915.

ROYAL NAVAL AIR SERVICE.—The following have been confirmed in rank of Flight Sub-Lieutenant and appointed to the "President," additional, for Royal Naval Air Service, all to date March 12th, 1915, and with seniority of as follows:—James Conrad Peter Wood, November 10th, 1914; Francis Warrington Strong, August 18th, 1914; Roger Martin Field, October 28th, 1914; Arthur Quilton Cooper (temporary), November 14th, 1914; Frederick Joseph Rutland, December 15th, 1914; George Herbert Scott, October 24th, 1914.

\* \* \*

The following appointment was announced at the Admiralty on March 15th:—

Probationary Flight Sub-Lieut. T. C. Vernon, to the "President," for Central Flying School, to date March 10th.

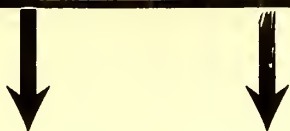
\* \* \*

The Secretary of the Admiralty communicated on March 9th the following extract from "De Tijd" (February 22nd, 1915):—

The Raid of the British Airmen,

Sluis, February 21st.

The general opinion of the public is that the raid of the British airmen was intended rather to obtain a moral effect,



**J. LLOYD WILLIAMS**, who took his Certificate at the Hall Flying School on Jan. 26th, 1915,

Passed the tests in excellent style after thirteen days' flying practice, taking his height at 1,600 feet.

The actual training time has been attested by him to be 112 minutes.

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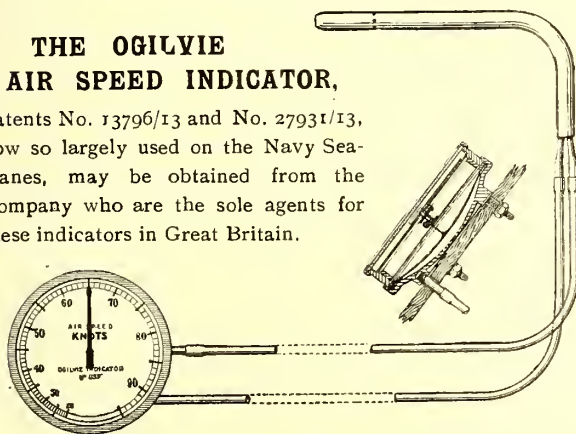
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In view of the arrangement made between the Treasury and the British Wright Co., Ltd., in respect to the free use by the Navy and the Army of the British Wright Patents, the Directors of the Company beg to notify all British Manufacturers that machines embodying the constructions so patented, may be freely manufactured in pursuance of such Government orders. The Company is prepared to receive applications from British Manufacturers for licences to manufacture under the Wright Patents in respect to machines for private use in Great Britain or for export to Foreign Governments.

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han to cause material damage. I was of the same opinion, until what I saw with my own eyes, and what I learnt from very reliable sources, made me change my mind. Besides the thirteen soldiers killed, and the thirty-five wounded in the Blankenberghe tram, and the submarine badly damaged at Zeebrugge, several batteries along the coast have greatly suffered, and a larger number of guns have been totally destroyed. At Knocke, one officer and seven men were killed, as well as many artillerymen. The bombs did not kill any civilian, nor touch any house.

[Attention is drawn to the curious action of the Admiralty in issuing as an official document a fortnight-old excerpt from a neutral newspaper which can have no more, if no less, claim to absolute accuracy than our own. All the information given above appeared weeks ago in British papers whose Dutch correspondents probably obtained their information from sources as reliable, or as unreliable, as did "De Tijd."

On the whole, the Admiralty has been more communicative in small matters than has the War Office, and more secretive concerning things which are really of moment, such as Fleet movements and so forth, but if the Secretary of the Admiralty intends seriously to adopt the very wise policy of "doping" public curiosity about important affairs by frequent injections of small items of information of no great military importance it would be well for him to engage a really clever press-agent instead of serving out stale second-hand information from foreign papers.—Ed.]

\* \* \*

The death of Flight Sub-Lieut. Shepherd, R.N.A.S., was the subject of an inquest held at the Town Hall, Eastbourne, on March 12th.

The East Sussex Coroner, Dr. G. Vere Benson, stated that this was the first fatal accident to an aviator that had occurred in his jurisdiction.

Sub-Lieut. Shepherd was taking a biplane from the sea-plane sheds to the aerodrome, and rose quite well. After one circuit it was noticed that he was in difficulties. Apparently he intended to fly over the crest of the beach, but was seen to fall into the sea.

Three witnesses gave evidence to the effect that they saw the biplane fall into the sea near the beach. They had noticed that it was flying very low.

Squadron Commander Philip Shepherd, R.N., who stated he was not related to the deceased officer, said he would like to tell the jury an important fact which had been ascertained as the result of a certain amount of loss of life, and the loss of a good many machines, namely, that if an aviator were flying over smooth water he could not tell whether he was 10 feet, 100 feet, or 200 feet above the water.

Witness saw Mr. Shepherd flying and thought he intended to make a turn and come in towards the land. Before he could turn he hit the water through not being able to judge the height. Witness had examined the machine, and found no defect in it or in the engine.

Flight Lieut. Graham Donald, R.N.A.S., stated that on seeing the machine in the water he swam out 200 or 300 yards. He had some difficulty in finding Mr. Shepherd owing to the waves, but he eventually succeeded in doing so. The Coroner warmly complimented witness on his gallantry, and the jury signified their acquiescence in this commendation.

Dr. Rainey, the medical witness, attributed death to the injuries to Lieut. Shepherd's head. A large cut on the scalp was caused by contact with a stretched wire.

The jury returned a verdict of accidental death.

Arthur Gelston Shepherd was born at Abingdon-on-Thames on January 18th, 1894, and so was only just over 21 years of age. He took his certificate (No. 849) on a Grahame-White biplane at Hendon on July 21st, 1914, and for some little time after the outbreak of war acted as assistant-instructor.

\* \* \*

An officer writing from the Persian Gulf says:—"I wish to goodness there was an aeroplane on this show. Every pound it weighed would be the equivalent of ten men in getting definite and accurate news of the Turks and Arabs."

Here is an opportunity for any spare pilots and machines of the R.N.A.S. which or who have nothing better to do, and are not quite good enough to be used against modern aeroplanes and high-angle guns on the Continent. Probably sea-planes would be the best type as they could get off big rivers like the Tigris more easily than off loose sand.

\* \* \*

The Secretary of the Admiralty notifies that correspondence for men who recently embarked as part of the "Royal Naval Expeditionary Force" or "Royal Marine Special Service Force," should be addressed as follows:—

Name .....

Rank or Rating .....

( ) Unit or Battalion,

"Royal Naval Division" or "Royal Marines,"

British Mediterranean Expeditionary Force,

c/o G.P.O., LONDON.

[In the case of letters to officers and men of the R.N.A.S. the words "Royal Naval Air Service" should be substituted for "Royal Naval Division," and presumably in the case of the Armoured Car Sections, "Armoured Car Support, Royal Naval Air Service," would be the correct address.—Ed.]

\* \* \*

Good boat builders are required during the duration of the war; rate of pay, 7s. a day and all found. Five years' references are required. Applications should be made to the R.N. Recruiting Office, London Aerodrome, Hendon, N.W.

#### MILITARY.

The London Press Bureau issued the following note on March 11th:—

The War Office makes the following announcement:—

The British aircraft were active and succeeded in destroying the railway junctions at Courtrai and Menin.

\* \* \*

The following passage occurs in the telegram from Sir John French issued by the War Office on Saturday, March 13th:—

Our aircraft has been very active, and the junctions at Don and Douai were destroyed.

\* \* \*

The War Office made the following announcement on March 14th:—

March 14th.

A train at Don Station was blown up by our aircraft this morning.

\* \* \*

The Casualty List, dated March 11th, and published on March 15th, contains the following:—

#### ACCIDENTALLY KILLED.

Second Lieut. A. G. Irving, Royal Engineers and Royal Flying Corps.

Lieut. A. E. Morgan, Royal Fusiliers and Royal Flying Corps.

Second Lieut. A. G. Irving, Royal Engineers and Royal Flying Corps (accidentally killed), received his commission in the Special Reserve of the Royal Engineers in June, 1910, and was employed in August last. He was apparently acting as observer, as he was not an aviator.

Lieut. A. E. Morgan, Royal Fusiliers and Royal Flying Corps (accidentally killed), received his commission in the 6th Special Reserve Battalion the Royal Fusiliers on October 29th, 1913, and joined the Flying Corps and was appointed a flying officer in September last.

He was born at Oporto on May 24th, 1889, and took his certificate, No. 547, on a Bristol at Brooklands on July 8th, 1913.

For some time prior to his appointment to the R.F.C. Mr. Morgan acted as instructor at the Eastbourne Aviation Co.'s School, where his personal charm won him many friends. He is a distinct loss to the Service, where his judgment and ability seemed to promise him a noteworthy career.

Particulars of the accident are not yet available.

\* \* \*

The following passage in the descriptive account communicated by an Eye-witness present with General Headquarters.

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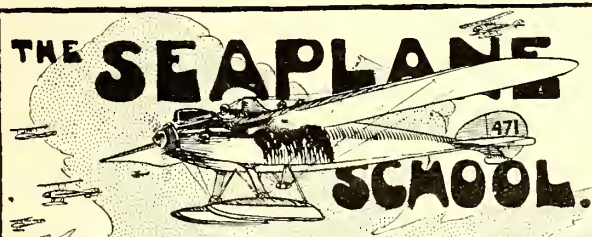
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continuing and supplementing the narrative published on the 11th inst., deals with aircraft:—

March 12th.

During the day (March 10) two remarkable feats were performed by our airmen. One flying at a height of only 150 ft. in order to make sure of his mark dropped a bomb on the important railway bridge at Menin, destroying one of the piers. Another, flying over Courtrai Railway Junction, dropped a bomb on the station and completely wrecked it. These are both points of vital importance on the German communications.

\* \* \*

The special correspondent of the "Times" in France says:—"The Army Air Service [Will the editor of the "Times" please instruct his correspondents and sub-editors that there are two flying Services, the Royal Naval Air Service and the Royal Flying Corps, and no others?—Ed.] has done magnificently . . . and in all conditions, except when misty weather prevented accurate observation, their reports could be accepted as a general basis for the working of the General Staff with complete assurance of their correctness.

"It has been said that the aeroplane has deprived war of its surprise. Napoleon it was, I believe, who declared that the military genius was the man who guessed what was going on on the other side of the hill. With the aeroplane no guessing need be done; but a new element has entered war which has kept alive all the old secret of surprise—the motor-omnibus. The words 'embuss' and 'debuss' have been consecrated in Staff orders. Many is the battalion which has received orders to 'embuss' at dusk at X and 'debuss' at Z, many miles along the front, in a very short space of time."

#### FRANCE.

Paris, March 11th.

The evening communiqué says:—

A thick fog has greatly interfered with the operations at different points of the front.

In Belgium a British air squadron successfully bombarded Westende.

\* \* \*

The official communiqué issued in Paris at 11 p.m. on March 14th stated:—

A British air-squadron effectively bombarded Westende.

\* \* \*

On March 13th the "Matin's" correspondent at Havre reported: "A rumour has been current that a Zeppelin had fallen in the neighbourhood of Tirlemont, in consequence of a storm. According to information from Belgium, the true story is entirely different.

"The Zeppelin in question was brought down by Allied aeroplanes—two French and two English. Forty-one Germans were on board. Nine were found dead, and twenty-nine so seriously injured that twelve died the following morning. It is superfluous to add that the incident caused a pleasant emotion in Belgium. The Germans, in their fury, arrested all those who had dared to photograph the débris of the Zeppelin."

[Our private Press Bureau has permitted us to state on wholly unreliable authority that the Zeppelin was in search of H.M. airship "Astra Torres," and that she carried a boarding party of 2 officers and 28 men, the objective being the seizure of her hydrogen which is becoming perilously scarce at Friedrichshafen.—Ed.]

\* \* \*

A foolish statement seems to have got into the "Journal," among other French papers, to the effect that "Mr. Glenn Curtiss and three other aviators from the United States, have arrived at Pau and enlisted in the French Army for the duration of the war."

Mr. Curtiss certainly has too much to occupy his attention in the United States in constructing aeroplanes to do anything of the sort. There is, however, a remote possibility that the report might refer to Mr. Frazier Curtis, a brother of Mr. Curtis of the Burgess-Curtis Company, who own the American rights of the Dunne patents. Mr. Curtis learned to fly at Hendon last year.



**Le Lieutenant-Aviateur Henry Jullerot, de L'Aviation Militaire Française.**

A welcome note from M. Henry Jullerot to a friend in London states that he has been appointed to a commission in the Aviation Militaire. It is about time too, and one cannot help wondering how and why the French have allowed so many of their best and most experienced aviators or aeromechanics like MM. Jullerot, Salmét, and Gondre to waste their time in marching regiments when their great experience of aviation would be of such high value.

M. Jullerot said that at the time of writing (early last week) he was passing for his military brevêt, and that his friend M. Louis Paulhan (who once flew from London to Manchester) had to pass his military tests a month earlier, as the F.A.I. brevet is naturally of no military value. He hopes to be detailed for long-distance work and bomb-dropping, as being more interesting than artillery control.

He also says that M. Bielovucic, the famous Peruvian pilot, was at the same station with him, and was about to leave for the front again. He had pleasant reminiscences of a sojourn in Antwerp with sundry R.N.A.S. pilots.

\* \* \*

M. Paul Gondre, who will be recollected as chief mechanic to the late Mr. Hamel, writes asking to be remembered to all his friends in England. He is at present a corporal in an infantry regiment, and has seen much service, but regrets that he has not one of his pet Gnomes to look after. He remarks in termination: "What a great pity that my poor Hamel is not alive. What services would he not have rendered in these raids of the British aviators?"

**GERMANY.**

The Berlin official communiqué of March 13th says:—

South of Ypres. . . . In this region the British aviators are displaying great activity. One was shot down the day before yesterday, and two were brought to the ground yesterday.

[This may be a belated reference to the disappearance of Mr. Chidson and Mr. Sanders, and it may mean that the accident to Mr. Irving and Mr. Morgan was observed from the German lines. Further information about either of these regrettable losses is, at the moment, lacking.—Ed.]

\* \* \*

A wireless message dated Berlin, Thursday, March 11th, Main Headquarters, reports as follows:—

In the western theatre of the war English aviators dropped bombs on Menin.

\* \* \*

The "Express" correspondent at Geneva reported on March 11th that the ninth new Zeppelin constructed at Friedrichshafen since the beginning of the war began her trials on that day. He states that either five or six of these ships have already been destroyed and that difficulties have been found in manning the airship with skilled mechanics, and the amount of their life insurance policies has been doubled since September.

[Nine in about 30 weeks is not an astonishing rate of production, especially as three were already nearly finished when war began, and it is probable that the rate of destruction is even higher, for the six said to be destroyed can be accounted for fairly definitely, and others must have been severely damaged in accidents and deteriorated by wear and tear.—Ed.]

\* \* \*

The "Central News" correspondent at Amsterdam reports that "It is stated from a source regarded as reliable that three new Zeppelins will shortly be tried at Friedrichshafen."

[It is extremely improbable that there is accommodation for three completed Zeppelins at once at Friedrichshafen.—Ed.]

**RUSSIA.**

The official communiqué published on March 10th says:—

On March 7th. . . . Our aviators successfully dropped bombs on Czuczine and Stavisk.

\* \* \*

Petrograd, March 12th.

The following semi-official statement was issued on this date, and is transmitted by Reuter in the following form:—

The comparatively calm and clear weather of the last few days has been made use of by us and by the enemy for aerial reconnaissances. Many aeroplanes and dirigibles have flown over various positions. Our large dirigible "Iliia Murometz" took part.

["Iliia Mourametz," or Elijah the Prophet," is the name of the big Sikorsky biplane, and is scarcely likely to have been adopted for an airship, so probably the word "dirigible" is merely an example of news-agency ignorance.—Ed.]

The enemy's aviators threw some twenty small bombs on Ossowiec, but did no damage to the fortifications, which have had to support thousands of heavy bombs from howitzers.

On the right bank of the Vistula, near the village of Verzhovo, we captured a brand-new German aeroplane, in first-class condition, with two aviators.

In the Pilitza region Captain Kravtsevitch attacked and put to flight a German aeroplane, which, however, succeeded in coming down in its own lines.

At certain places the enemy dropped incendiary bombs from its aeroplanes, but was unable to set fire to anything. In view of the favourable conditions for these aerial reconnaissances, enabling our artillery fire to be corrected, both our heavy artillery and that of the enemy have shown a very great activity.

**BELGIUM.**

The Sluis correspondent of the "Tyd" reports that at Ostend the harbour station, after three air raids, is still standing, though slightly damaged. The reason for the repeated air attacks, according to the correspondent, is that Ostend is

used as a submarine base, and the station as barracks for marines. The Hotel La Couronne, where high officers used to stay, has been closed, as in the immediate neighbourhood many bombs have been dropped. Some villas on the boulevard have also been damaged. The population have been forbidden to leave the town or enter the prohibited area near military places. The bridges are strongly guarded.

\* \* \*

The "Journal" reports that seven aeroplanes flew over Poperinghe on March 13th and dropped 10 bombs. There were 10 victims, military and civil.

**ITALY.**

The officer commanding the III Army Corps communicated the following Orders, via the Milan press, last week:—

Only nationals of the kingdom of Italy may fly or travel by the airway, and this only by obtaining permission from time to time, application for which, with ample particulars, must be made at least ten days beforehand.

School machines are only allowed to fly within the radius of one mile of the school sheds and are to bear identification marks to be communicated to them by authority from time to time. Even so, authorisation to carry photographic apparatus is required.

The Provinces of Como and Sondrio and the country north-east of a line drawn from Bergamo through Brescia towards Verona are declared prohibited areas. This is equivalent to forbidding flying within 40 miles of the Austrian frontier.

Even authorised Government aircraft are to descend if they inadvertently trespass over the zone north-east of the aforementioned line.

That one of the M series, possibly the latest M 3, has actually exceeded the Zeppelin height record is insisted upon. 11,000 feet appears to be the figure.

Also V is reported to have attained her projected speed of 65 miles an hour. There must always be ample room for errors in calculating a dirigible's air-speed. She was only built for a "speed-merchant," it will be remembered.

Recruiting among the rank and file of Italy's forces for men to train to the work of the "Artillery" escadrilles is going on.—T. S. HARVEY.

**DENMARK.**

The Central News correspondent at Copenhagen says: "It is reported from Esbjerg that on March 13th the cutter 'Hvisfeldt' brought in the wrecked bodies [No flowers, by request.—Ed.] of one or two German waterplanes found in the North Sea at a considerable distance from the land. It is rumoured that the airmen were rescued and taken to the German island of Sylt, west of Schleswig."

**EGYPT.**

The special correspondent of the "Times" in Cairo tells an amusing story of an Arab prisoner, who said: "I was two days without food by the canal. The others had food, but I had none. I was an officer's servant and my officer said he would see that I had food, but I had none. While we were near the canal a tiyaré (aeroplane) came flying over us. My officer said: 'Shoot, shoot.' But I did not shoot. I never had seen a tiyaré before, and it was going so beautifully, like a bird. He said 'Shoot' again, but I wanted to look at it. Then he was very angry and we had an altercation. So I shot my officer. I did not want to shoot the aeroplane, it was going so beautifully."

[This is probably the most perfect story Africa has yet produced.—Ed.]

**GERMAN SOUTH-WEST AFRICA.**

The "East Rand Express" publishes a letter from a member of "D" Squadron, I.L.H., dated February 1st:—"Yesterday was a calm day, the first for weeks. . . . Of course Mr. Aeroplane must come along and do a little bomb-dropping. However, he didn't put in an appearance here but farther up the line."

The "Weekly Cape Times" of February 15th states that Reuter's special correspondent with the Central Force, German South-West Africa, at Chaukaib on Feb. 1st, says:—"At the moment warfare is rather a one-sided affair, and consists



in periodical attacks by a German aeroplane, which is cleverly manipulated and never within range of our guns for long together.

The airman came again yesterday and once more got away. He did no serious human hurt, because we have the means to make his attacks practically abortive. One man had a slight skin wound on his back. He was lying face downwards a dozen feet from the bursting shell. The fragment that hit him was no larger than an ordinary pill. It must have travelled a devious route, for it was found in the knee of his breeches.

#### U. S. A.

The following appears in the press in general:—

Buffalo, N.Y., Feb. 19th: An unknown aeroplane passed over this city a few minutes before eight this morning. It was travelling at a terrific pace, and in a north-easterly direction.

\* \* \*

The following gem is from the "New York Tribune" of Feb. 29th:—

Islip, N.Y., Feb. 28th: Henry Gates startled Islip last night. As it was Saturday, and school was closed, time hung heavy on Henry's hands. He pondered. Early in the evening the men noticed a brilliant star right over the village when they went about their chores. Later, when it was time to put the cat out, the star was still there. Within five minutes of cat curfew half the village was in the streets star gazing.

The most cursory gaze convinced every one that it was no star. The other and better half of the village was called out. Now high, now low, some baleful illumination was hovering over Islip. There was no explanation save a half-hearted assertion that a Zeppelin had crossed the Atlantic. Sleep came slowly to Islip.

This morning Henry could conceal his elation no longer. Pridefully and gleefully he led his father to the wood-shed and displayed an enormous kite to which he had fastened a lantern. In a moment Henry wished he had not selected the wood-shed as a hangar.

\* \* \*

Various papers announce that while making an exhibition flight on Sunday at the Panama Exhibition, Lincoln Beachy, "a well-known American aviator," was killed.

Mr. Lincoln Beachy will be remembered as the most notorious of American aerial acrobats. He possessed great skill and was extraordinarily reckless, not only of his own life but of the lives of other people. He might, with his ability as a flier, have done much to forward the genuine progress of aviation in the States, but he chose rather to develop the circus element which has been responsible for the debased state of aviation in America, a state from which it is only now being raised by the demand for aeronautical war material.

#### CANADA.

From the "New York Times":—

Ottawa, Feb. 20th.—Considerable interest has attached to the incorporation this week of a new company which purposes to manufacture and deal in aeroplanes and seaplanes particularly. The Curtiss Aeroplanes and Motors, Limited, which has an initial capital stock of 50,000 dols., has obtained a Federal charter and will have its head office at Toronto and, it is understood, will begin active work at once.

Aeroplanes and seaplanes are going to take a more active part in the present European war than they have done, and many will be required. The firms within the British Empire which manufacture aeroplanes and seaplanes are taxed to their utmost to supply all that are required, and this has probably induced Curtiss to establish a branch factory in Canada. The official announcement of the incorporation of the company appeared in to-day's "Gazette."

The explanation is that the principal parts of the aircraft will be shipped from New York to Canada and put together.

#### AUSTRALASIA.

A correspondent writes:—

The Melbourne-Sydney flight, which was to be made by Capt. Petre, is "off." As THE AEROPLANE said, the Caudron wouldn't climb properly. The first time Capt. Petre took the

machine up he climbed to 5,000 ft. and expressed his satisfaction of it. The next day he took up the owner (or former owner?) Mr. M'Conochie, and it was then that it wouldn't climb. All the local papers are extremely enthusiastic over it.

\* \* \*

Mr. Delfosse Badgery claims to have obtained the Australian height record of 12,500 ft. He has flown over 2,500 miles under all conditions, and in many instances across very rough country. He has constructed a machine that does not require the assistance of mechanics to start or to hold back for him.

#### NEW GUINEA.

From the "Melbourne Age," January 15th:—

Melbourne, Thursday.—Unknown to the general public of Australia, the Commonwealth Aviation Corps has been upon active service. Two Commonwealth airmen attached to the military forces have just returned with their machines from German New Guinea, whither they were sent shortly after the Australian expedition was despatched.

"Yes, we really took the machines to New Guinea," said Lieut. Harrison, of the Point Cook Aviation School, to-day. "Mr. G. P. Marz and myself went with four mechanics, and we left about the beginning of December. It was 5 o'clock in the evening that we received orders to go. At three next morning we were in a train bound for Sydney, the aeroplanes having been packed and dismantled ready for travelling, and all stores collected and spare parts arranged. We took with us two machines. One was a biplane, an ordinary land machine. The other was a Maurice Farman waterplane for sea work, and we were looking forward to doing something at New Guinea. . . . But we found when we arrived at Rabaul that they had no need for us.

"Bombs? Oh, yes; we had some of those. We manufactured 36-pounder lyddite shells on the voyage out. To the base of those we attached little propellers, so that, when it was dropped, the shell would have a rotary motion similar to that given by the drilling of a gun. This would serve to keep the head downwards, and prevent the shell from turning somersaults; but we had no opportunity of using them."

[Mr. Eric Harrison will be remembered as a Bristol instructor.—Ed.]

#### JAPAN.

From the "Manchuria Daily News," Jan. 29th:—

"There are indications that the escape of the son of Capt. Meyer Waldeck, the aviator who had flown out of Tsingtao on the night preceding the evacuation of the fortress and was subsequently detained at Nanking, was made with the connivance of Chinese custodians who are under command of Gen. Baron Fengkuochang. The refugee is said to have returned to Germany via America with a bundle of important documents. The matter is engaging the attention of the Japanese authorities."

#### To "George."

(Who, according to the Editor, "wished he had died in the night.")

George! As I take my pen in hand a tiny shiver  
Thrills my frail form; alas! I know that horrid quiver  
Portends for me a slight derangement of the liver.

Full well and oft are known to me the symptoms fearful;  
I need not say my state is positively teasing  
When taunted by some jovial friend, so *beastly* cheerful!

But you, who scale the azure heights like seraph daring,  
I hate to think, as through the clouds you're onward tearing,  
Your placid brow a weary, bored expression's wearing.

Think of our rapt'rous joy when on some morn we might  
gorge

Admiring eyes upon your face in "Mirror" bright, George:  
How thankful then we'll be you died not in the night, George!

F. E. B.

### An Accident at Farnborough.

It was reported on March 11th that Mr. Hooper, stated to be a test pilot at the Royal Aircraft Factory, received serious injuries on March 10th while flying at Farnborough. It was stated that he was making a spiral descent when another aeroplane crossed his path and he had to ascend. He circled to the aerodrome again, and as he was banking the engine stopped and the machine made a nose-dive from a height of 150 ft. The machine broke in two. The pilot was taken to the Connaught Hospital.

Mr. Hooper is a lieutenant in the Reserve of the R.F.C.

Another account states that the machine was a B.E.2c, and that when doing a very steep bank at about 150 ft. above the ground the machine started a spin, which the pilot could not correct, and that this ended in a nose-dive. Mr. Hooper broke one arm and damaged his head, but it is understood that he is not actually seriously injured. It will be remembered that he landed inadvertently in Thames Ditton a week or so earlier on a Martinsyde scout.

It seems impossible that the B.E.2c, which, whatever its faults may be, is certainly inherently stable, should spin under any circumstances, especially on a very steep bank, when the whole of the enormous tail would be opposed to any spinning action. The matter is therefore well worth investigation.

It occurs to one that what was described as a spin may in reality have been simply a stall on a spiral path. If it is possible to stall a machine on a straight path by flattening out too soon it must equally be possible to stall on a spiral, and this is a subject which the writer has never heard discussed by pilots. An undoubted example of such stalling was that of Mr. Hawker on a Sopwith scout at Brooklands, when he came out of a loop so close to the ground that he was afraid to put the nose of the machine down, and consequently held the elevator lever back, with the result that the machine simply fluttered round and round on a spiral path and eventually fell into some trees. The machine certainly looked as if it was spinning, and yet it was on a very steep bank, so it must have been practically impossible for the tail to spin round the planes. In the case of a machine like the B.E.2c, which is definitely proved inherently stable, such spinning is even more impossible.

If this particular type of machine is deliberately stalled on a straight glide, and the elevator is kept held up, it apparently comes down in a series of short drops of not more than 30 or 40 feet each. The danger of stalling an inherently stable machine near the ground is that unless the pilot has had a great deal of experience of such machines, instead of sitting still with the lever right back in his chest and the elevator flaps right up, he is almost certain to push the lever forward to get speed up and get full control again. In that case the probability is that the machine will hit the ground at a steep angle, in which case it would probably turn over and at any rate would damage the passenger very severely. On the other hand, if the pilot simply sits with the lever pulled back, the machine will either land at something like a respectable angle or else will pancake, possibly with a list to one side, in which case the machine is pretty certain to be smashed, but the passenger has a much better chance of escaping injury.

If, however, an inherently stable machine is stalled while on a steep bank, it is fairly obvious that it must side-slip to some extent and get its nose down before it can come under any kind of control at all. The moral seems to be that, even with a perfectly stable aeroplane which has also sufficient controllability to allow the pilot to break down the stability when he wants to, it is very unwise to play tricks near the ground, that is to say, within 200 or 250 feet of it, in the hopes that if the pilot makes a mistake the inherent stability of the machine will pull him out.

There are plenty of machines in which, if the pilot does make a mistake at 500 feet or so and then lets go of all the controls, the machine will, if left to itself, get into a straight nose dive, out of which the pilot can pull it without trouble.

As has so often been stated in this paper, inherent stability is a most desirable quality in any aeroplane, but it must not be abused by placing too much confidence in it at the wrong time and place.—C. G. G.

### To "Archibald"—A Plea.

(Dedicated without permission to a certain member of H.M. Forces who owns to a sneaking affection for enemy airmen.)

I prithee, gallant Archibald,  
Nay, look not so severe,  
'Tis but a harmless Albatros  
Which shyly draweth near.

Cease that wild torrent of abuse,  
Thy spirit curb, proud one!  
Why shouldst thou seek to strike a blow,  
'Tis but the gentle Hun?

His Teuton heart is full of love  
For us who crawl below,  
Upon no evil is he bent,  
Why dost thou hate him so?

Oh! Archibald, I drop a tear  
Lest thou the Hun should slay;  
Cease thou thy rude remarks awhile,  
Go, seek another prey!

What sayest thou? Thou hast a fear  
His bombs are meant for us?  
Oh! Archibald, I have misjudged:  
Bring down yon Hunnish 'bus!

MARY JOSEPH DILLON.

### Aircraft at Sea.

The crew of the steamer "Linhope," which arrived in the Tyne from London on March 11th, state that they had a narrow escape from a Zeppelin bomb on Wednesday night. While off the Yorkshire coast at midnight they heard a whirling sound and saw a flash of light, and a large, dark object plunged into the sea about 20 yards from the steamer. There was no explosion and no one was harmed. The assumption is that the object was a bomb from a hostile aircraft.

### Useful Work in Sussex.

Many people know of the good work Mrs. Magnus Volk and other ladies are doing, not only for soldiers and sailors, but for the R.F.C., R.N.A.S., mine-sweepers, wounded Belgians, refugees, and many poor in Brighton. There are still, however, a larger number who do not know of this work, and so have not had an opportunity of contributing. If the organisation is to be continued more money must be forthcoming, as the funds are on the verge of exhaustion, and an urgent appeal is made for promises of 1s., or even 6d., a week for three months so that at least ten needlewomen may be kept employed. Subscriptions will be most gratefully received by Mrs. Magnus Volk, 38, Dyke Road, Brighton, or by Mrs. Henry Wood, New Close, Lyndhurst Road, Hove (opposite the Motor Halt), who is acting as hon. secretary for the fund.



SMASHED BUT NOT SPLINTERED:—A pair of Triple X Goggles which had been through a bad aeroplane accident.



## AEROFOILS AND VORTICES.

On Wednesday, March 10th, Mr. F. W. Lanchester, M.I.C.E., a member of the Government Advisory Committee for Aeronautics, delivered an interesting lecture to the Institute of Automobile Engineers in the lecture hall of the Institute of Mechanical Engineers.

Mr. Lanchester prefaced the lecture proper by saying that he thought that empiricists (which in colloquial English means practical experimenters) had an inclination to underrate theorists, and that theorists on their side also were inclined to underrate results obtained by practical experiment. He, therefore, expressed the opinion that a closer alliance between the two would result in more rapid progress. With this sentiment one can heartily agree; but, unfortunately, it always seems to be as hard to mingle the experience of the rule-of-thumb mechanic with the theoretical deductions of the scientist as it is to mix oil and vinegar.

Mr. Lanchester's lecture amounted, in fact, to a dissertation on the theory of sustentation in flight, which the author said ought properly to be sought in the study of the vortex system set up in air by the distribution of pressure on the aerofoil in motion, as constituting the reaction by which the load is sustained. The method of investigating this question involves that which has been sometimes termed the doctrine of "the continuous communication of momentum." To the limited comprehension of the writer, the meaning of this is not precisely clear, but it apparently amounts to a theory that the momentum imparted to the air by contact with the aerofoil is communicated from particle to particle till the ultimate effect is transmitted to the ground, so that in reality an aeroplane flying at any height whatever is actually supported through

the interposed air by the ground. This, of course, must be so in fact, otherwise the aeroplane would be in the state of the man standing in a clothes basket and lifting himself by the handles.

The general theory seems to be that the support is given by the reaction from the inertia of the air displaced by the aerofoil.

The lecturer showed by diagrams how the air pressure under an aerofoil is a plus quantity, with a tendency to flow outward from the centre to the tips, and the pressure above the aerofoil is a minus quantity with a tendency to flow inwards from the tips towards the centre. (See Fig. 1.) This apparently sets up a series of vortices from the wing tips of an aeroplane. (Figs. 2, 3 and 4.)

Mr. Lanchester pointed out that one of the most important features to note in order that the sectional form of an aerofoil should be conformable to the lines of flow of the air is that the air in the region being entered by the aerofoil has been given an upward trend. This means that in order to meet the air conformably the aerofoil must have a dipping front edge, and this apparently accounted for the value of the leading edge discovered experimentally (and apparently on a false hypothesis) by Mr. Horatio Phillips in England, and by the late Herr Lilienthal in Germany. The lecturer also indicated the existence of a definite aspect ratio of least resistance, but admitted that it is impossible to give any mathematical solution of the problem, owing to the fact that the laws governing aspect ratio are unknown, and with the absence of information on this point the solution is a matter for the laboratory.

Thereafter, the lecturer passed on to the quantitative theoretical treatment of his subject, touching lightly on the fact that the simple bifocal vortex pair is impossible, owing to the high velocity in the vicinity of the foci, or vortex, filaments, lamenting, in conclusion, that it had not been possible in the present paper to do more than give an outline of the theory of sustentation with special examples and references to practice, and experiments to illustrate the importance of the theoretical aspect of the subject, as bearing on the experimental treatment. The latter had hitherto been dealt with almost without regard to considerations of theory, and had degenerated into empiricism pure and simple.

## Ornithological Observations.

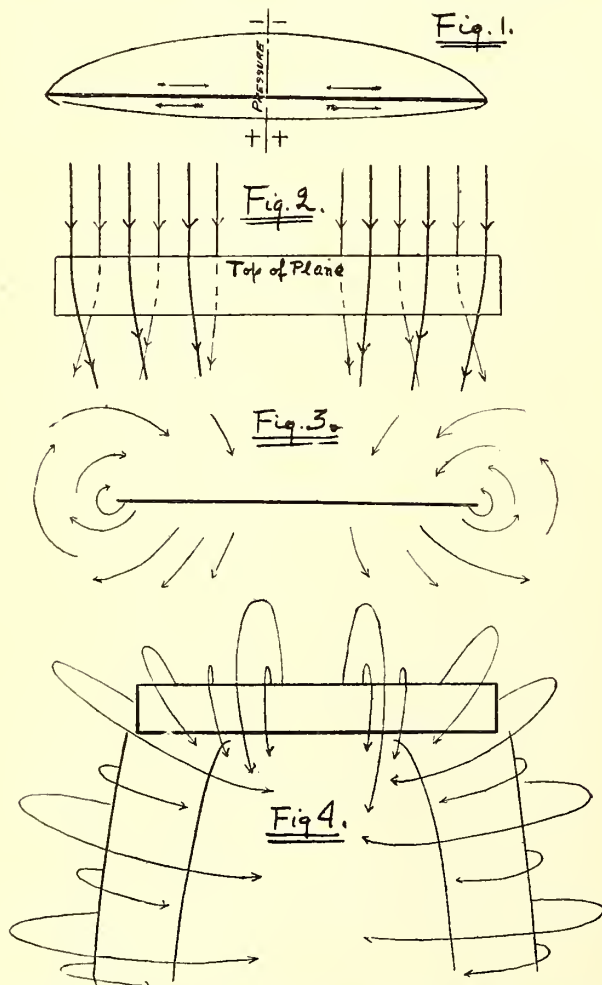
A correspondent sends the following amusing cutting from "Pearson's Weekly" of March 13th:—

"Do Parrots Foretell Aeroplane Raids?—If parrots could state the nationality of any aeroplane they hear there would be no need for men to be continually on the look out for hostile aircraft. The parrots would give warning quick enough. The French authorities have had a number of parrots kept in the outposts of Paris, as well as on the summit of Eiffel Tower. The birds have shown a remarkable power of heralding the approach of an aeroplane when the latter has been quite invisible to trained observers stationed near.

"Warning is given by the birds in a peculiar way. Their feathers literally bristle with excitement, and they yell and screech until they are pacified. The extraordinary thing about this power of the parrot is that it has nothing whatever to do with eyesight, many of the parrots having given warning when perched away from the windows. This peculiar power of parrots was discovered quite accidentally by the excitement they showed whenever the Paris air patrol was flying, or a raid was made by the German aircraft."

The correspondent adds, "Rome Saved by Geese! What next?"

[The truth probably is that someone in the presence of an intelligent parrot once called a biplane a "Taube," explaining that it meant a pigeon, and that the story went the rounds, so that whenever an aeroplane is heard it recalls the jest to every parrot in Paris, who thereupon shrieks with derisive laughter. The most amusing thing from our point of view is that quite a number of people possessing some intelligence will believe "Pearson's" yarn. Someone might now start the story that white mice are kept on all submarines because the twitching of their noses and ears, and frantic squeaks, betray the approach of a destroyer, the churning of whose turbines reminds them of the purring of a cat.—Ed.]



Vortex Effects of Aerofoils as indicated by Mr. Lanchester.

## Aeromotors: In Kind and Construction.

BY GEOFFREY DE HOLDEN-STONE.

"Wanted," said a recent advertisement, "a young man of some little education for a leading newspaper, to make himself generally useful and to write on motor topics." So THE AEROPLANE being, on the one hand obviously a newspaper, leading goodness knows where, and I, on the other, a most unlettered person, merely a craftsman and notion-peddler of sorts, still young enough to learn, appallingly anxious to be useful, and withal, accustomed for certain years to commit motor-topics habitually—everything seemed to fit when the editor asked me if, like the wild cat stroked tailways, I would do so; with due regard to the riddle of why is a motor when it spins? Also when it doesn't.

Whatever happens then, he is to blame, especially if it is anything unusual—that is to say unEnglish, outside fitness for the discreet mirk between Charing Cross and Queen Victoria Street. For having no scientific mathematical proclivities, no logs to roll, nor given to chase  $x$  through any algebraic wildernesses, I am unable to do more than raise the ordinates of probability on the base of the given fact. Or once in a way, upon nothing more substantial than the dream of thumb-craft's shaping; which somewhere, somehow, sometime, must come true because it ought to; and so is just as true to follow now.

Otherwise, I have little respect for so-called "laws" that are only observations crystallised by half-accidental circumstance; got by professors out of immoral preconceptions—things one has seen falsified by a pint of liquid ammonia—and still less for the text-books that mummify them in many editions. I have none at all for persons and orthodoxies; only for performances; and that in measure. Nor much, in that way, for the orthodox-mediocre that just succeeds; but a very great reverence for the failure that went after something bigger and different from the crowd. That was probably—who knows?—only a triumph postponed awhile. The beauty of the ideal is, that because we are able to see it afar off, it must be greater. There is then, it seems, something bigger than the contented success. The pursuit matters more than the capture. Train caught or woman won, we stop running after them; and stop living maybe at our best. But with the ideal always just ahead, beckoning and beautiful, to follow on is not to waste strength or youth, but to keep both eternally. . . Win or lose, hit or miss, there is only one worth-while idea, one motto for your work or mine. . . "Why not?"

### The Gnome.

Here is the classic instance of the triumph postponed: from as far back as the 'eighties, when it was first projected among a dozen other notable ideas by Ferdinand Forest, whose patent-references of nearly every principle involved and any number of details, are still extant. Not only in the mass design up to fourteen cylinders, but even in such matters as crank-shaft alimenation, piston-head inlet valves, tappet-and-rocker controlled exhausts, and the general system of the ignition! He even suggested, as an alternative, something in the way of cylinder trunk induction, not at all unlike to-day's monosoupape. But the practice of the day, still more the material, and most of all the money, failed him. The single, clumsy example he built—with six cylinders, the famous "Asterie"—just ran, but would not keep on running.

Years later Bouton tried the same idea with four cylinders, and with no better result. So have others, tempted by the kinetic advantage of cylinder rotation: MM. Burlat Frères being the least unsuccessful. Their four- and eight-cylindrical camion-type models were all right on the bench, even on the brake-test at top speed, but somehow would not pull on the road!

Chiefly, all attempts failed because of the lack of flexibility which is the inherent vice of the rotary type. The range, even in the Gnome models, with one exception, is only five-thirteenths of the maximum r.p.m. This, of course, matters less aloft than anywhere in motor use. But then there were no aeroplanes!

So it was left to the Seguin Brothers, not only to adapt the rotary principle in the one capacity where this defect was of least moment, but so to adapt it from pure refinement of

material and detail design that all other defects—which were numerous and no less obdurate—were practically disposed of. And finally to produce in the monosoupape the solitary rotary motor in which the flexibility range, provided that the motor be properly starved—may actually amount to nearly eleven-thirteenths of the total!

### The Reason Why of the Rotary.

The reason why, being the most important part of the whole rotary-motor question, has naturally been left unexplained, hitherto, though it does not seem out-of-the-way obscure. That is, if we regard the elementary physical facts along with the mechanical, which most people decline to do.

The ideal of gas-engine practice is to keep the gas-stream flowing one way, from earliest induction, through combustion-use, to final exhaust vomit, with the least interruption—or rather change of course—that sets up back-lash against efficiency, on either side of combustion-use.

Now, in the average four-stroke, non-rotary motor you start with this ideal barred anywhere from 75 to 25 per cent., mainly because it is a four-stroke motor. Therefore, you strive towards the lower figure by such means as large or multiplied inlet-valves, strongly sprung to secure the most positive valvular action—which incidentally wastes developed power horribly—or by large-ported sleeves—which, in overcoming waste of power, add to the cost and weight—by large easy-curved and sometimes hooped induction piping: by the shortest induction course you can get—which may easily make the mixture-feed uneven if you don't take special care—and by all other methods familiar enough to the youngest motor-salesman; all of which likewise apply, more or less wastefully, to the exhaust.

But you haven't got the motion of the motor itself working against you to spoil your piston effort of suction or exhaust, or both!

### Two-Stroke Theories.

In a two-stroke motor—especially a valveless one—on the other hand, you theoretically escape most of the physical obstacles. You realise the mechanical advantage of the piston, acting as the most positive of slide-valves, in combination with the ports, especially if you study the little-known possibilities of port-cutting. You also get mechanical simplicity, theoretically. Often enough with numerous very practically-apparent mechanical defects. Physically, too, you are liable to crowd things. To get your exhaust out of the way of the induction you are likely to make it so free that you waste the power of good half-burnt mixture. Avoiding this, you may back-press the induction, unless you use differential-ended pistons below the working ones to force-feed it.

Even so—and there is only one way of preventing this when the induction ports are at the lower end of the working cylinders—you may spill much of the new mixture into the opposite exhaust ports! This—which is one of the few defects of the Côte and the Koëchlin motors—if the spark is too far or too suddenly advanced—may mean reversing the motor or even breaking the crank-shaft. You may, certainly, effect your induction, thus force-fed, by way of a transfer up to a valve in the cylinder head. But it will have to be a mechanically-operated rotary or a ported piston valve, however lightly sprung or pressure-balanced, for no mushroom valve will stand the hammering at speed. It has been tried!

Bearing in mind, however, that in a two-stroke motor there is no direct piston-suction but only minus pressure of an unreliable kind to help the mixture into the cylinder, taking the mixture up to the head before entry reverses its flow unfavourably for the efficient working of this cycle; which experience has shown to be only at its best when the mixture enters at the end of the piston out-stroke, to flow directly upwards, so that the cylinder-head may act solely as a compression and explosion base.

Still, at worst, the motion of the motor is not working against its own induction efficiency!

But recollecting that any gas is no more immune from the action of centrifugal force than anything else, solid or liquid, it will be clear that, in any rotary motor with the induction



made via the cylinder heads, centrifugal force must always oppose efficient entry to some extent, in the four-stroke cycle; and in a two-stroker will probably prevent it wholly as soon as a comparatively low speed is reached. Thus, incidentally, one accounts for the spasmodic running up to a low critical point, followed by a sudden dying-out of power, in so many attempts at two-stroke rotaries. And it will be equally evident that although the weight of the mixture and its increasing velocity as the speed increases will overcome the opposing centrifugal force, in the case of a four-stroke motor, that motor cannot have any notable flexibility.

So, in fine, one comes to realise the physical disabilities besetting the rotary-motor proposition; which, apart from any others, the designers of the Gnome motor must have had to combat at the outset. Clearly, there was only one thing to be done, at least as far as initial induction was concerned. That was, to adopt the earliest method Daimler used for exhaust scavenging, i.e., piston-suction draught into the crank-chamber, with final induction through automatically operated valves in the piston-heads.

Theoretically, nothing more ideal, as to absolute unbroken directness of the gas-flow; especially with the exhaust valves in the top of the cylinder-heads. Mechanically, the only problem was the inlet-valve; the weight of which, being in this case so directly subject to centrifugal force, clearly told against its efficiency as a valve, and utterly barred the use of any spring light enough to allow it to open before the low crank-chamber pressures. Yet it had to be self-opening, with absolutely reliable action!

Now, for the obvious reason that the motor was to be a multi-cylindrical rotary, and a four-stroker at that, no striker mechanism operating the valve from beneath—as in the Daimler—could be used; especially since the valve had to open only at every other piston out-stroke. Quite apart, too, from the high connecting rod attachment necessary for the proper balance of a short-trunked piston—which left no space for much operating mechanism below—the obvious fact of the combustion effort obliged the valve to seat above and upon the piston-head.

Thus, the only possible solution was to counter-balance the weight of the valve, carburettor-float fashion, with two short-levered pivoted weights; together just so much heavier than the valve as to co-act with the centrifugal force and keep the valve on its seating during the compression and exhaust strokes—the combustion pressure would naturally hold it fast closed—and yet, by their rebound, throw it from its seating and keep it open during the entire induction stroke.

*Faute de mieux possible*, this solution was adopted and persists to this day in all but the monosoupape. Only, it naturally has the vice of all automatics, that you cannot prevent it sticking if contributory causes exist, which need the greatest care to avoid.

True, it is accessible enough through the exhaust valve opening, but it is unwise to interfere with it; or—unless you are expert enough to take on a delicate dismounting job—do more than wash it with petrol or the finest of kerosene. And then all counter-balance mechanism hunts under wide speed variations; and no conceivable a.o. valve can ever be more than a pulsating interrupter of a fluid-pressure stream; never a true valve with a clean cut-off and release definitely controllable. Thus, do what you may, such a valve makes a wide flexibility range clearly impossible. Adjusted and set to do its best at the higher and more useful speeds, it is not fair to expect such mechanism to work well at any that are much lower.

#### Speed Variation.

On the other hand, the secret of the great flexibility of the Gnome monosoupape is the absence of any induction-valve except the piston, which is working as a piston in any case; and has its speed controlled in the widest degree of which mixture supply and ignition-moment are capable of being regulated. Apart, too, from getting rid of mechanism—and risk of its irregular behaviour therewith—the best feature of two-stroke mechanical practice, free port-induction, has been brought into four-stroke, while retaining—and that in a manner assuring continuity—all the previous ideal directness of mixture flow from initial supply to exhaust. Moreover, not only without crowding the relation of both—the vice of the bulk of two-

stroke practice—but also in a manner which should assure the best and most economical carburation after clean scavenging.

The further secrets of the Gnome monosoupape model's function are these: that although the pistons naturally descend below the inlet ports during the firing stroke, the pressure of the gases under combustion is so much greater than the crank-chamber pressure that no new mixture can enter. Also, the former cannot ignite the latter because it is too rich for ignition, being composed of petrol—pump-injected into the body of the motor, there being no carburettor—floated on such air as has been sucked into the crank-chamber through the hollow fore-end of the shaft. (Here one may suggest that a belt of gauze secured outside the ports would absolutely preclude free-ignition, no matter how diluted the mixture had accidentally become.)

But the fact remains that impoverishment of the mixture to the right explosive proportion does not even take place during the out-stroke subsequent to the exhaust in-stroke, but is only effected—within the cylinder itself—during the compression stroke after the entry of the rich mixture through the ports; and then only because the exhaust valve has been kept open—under a wide range of direct control on the cam-lift—during fully two-fifths of the intermediate stroke, to enable the descending piston to suck in half a cylinder full of pure air; which incidentally keeps the exhaust valve and cylinder cooler.

Thus, not only is the speed of the motor regulated by the ignition advance or retard, but also by the initial fuel-feed regulation and the subsequent impoverishment degree due to the extent of the exhaust valve lift-control. Which also naturally regulates the power of the explosions. Obviously, then, under these conditions, not only the flexibility of the motor, but, to a rare degree, its elasticity, ought to have an extraordinary range. Furthermore, this system of direct fuel feed—especially as it is carried out in a newer and better fashion than was ever employed in the Antoinette and others—should enable motor-spirit of much heavier gravity to be used than has hitherto been found advisable, or even practicable, to use in any other rotary make. In fact, the limit of gravity should only be the limit of keeping the spirit duly atomised.

So much, then, at least, for the whys and wherefores of the theoretical and practical differences between either type of Gnome motor and any other rotary, pending the discussion of their further mechanical detail, and points of maintenance and general management.

(To be continued).

#### The Fire Danger.

The Pyrene Co., Ltd., 19-21, Gt. Queen Street, recently gave a demonstration to a representative of this paper of the efficacy of their fire extinguisher. The principal points of interest are as follows:—The weight charged ready for use is under 6 lbs., the size is 3 inches diameter by 14 inches long, and the receptacle holds one quart of the Pyrene liquid. The machine is a simple double-acting hand pump, capable of projecting a continuous stream of liquid a distance of about 20 feet. It is supplied in brass or nickel finish.

The Pyrene liquid is a non-conductor of electricity, having a dielectric strength of 13,240 volts per 1/10 inch, and giving a resistance of 30,000 megohms per cubic inch. It will not damage the most delicate fabric, rubber, or varnished surfaces. It will not freeze at 60 deg. F. below zero. It will extinguish burning petrol, acetylene gas, etc., instantly, as demonstrated to the writer last Saturday. The Pyrene liquid, on coming in contact with the fire, is transformed into an elastic, non-poisonous gas-blanket which cuts off the flame from the surrounding air and instantly smothers it.

There is a double spring clip holder supplied for attaching the receptacle on aircraft, motor-cars, etc., which holds it securely in such a way as to be instantly accessible. Pyrene seems to be quite the equal of anything on the market for use on aircraft, and it is stated that the Admiralty has ordered quite a number of the extinguishers for various air stations.

Mr. George W. Beatty, the proprietor of the famous Beatty School at Hendon, speaks very highly of the Pyrene extinguisher, having saved two machines recently by its use which would otherwise have been totally destroyed.



## The Testing of Engines.

The photographs reproduced herewith show a test-stand for aero engines which is now being produced by the Dudbridge Iron Works, Ltd. Naturally, any type of back-plate can be fitted to suit any particular type or make of engine. This type of stand has been supplied to various Government departments, both in this country and in the Colonies.

The Dudbridge Iron Works are an old-established firm who are famous for good sound workmanship, and it would probably pay engine-makers very much better to buy these test-stands from them than to go to the trouble and expense of building them up for themselves.

Another type of test-stand is shown with a 200-h.p. Salmson engine thereon, which is of the swinging type, on which the engine torque is taken on a weighing-machine shown on the left of the picture, and the whole horizontal frame is carried on a central axis mounted on ball-bearings.

## For Machine Work.

A firm of machine and general engineers who will be found very useful by aeroplane firms in need of good-class metal-work to be done promptly are the Munday Motor Components Company, Ltd., Crown Works, Garton Road, Upper Tooting Road, S.W., who foresee the great developments in store for the aircraft trade in the future, and are out to obtain a sound connection therein. This firm has for some time been doing machine-work for various leading aeroplane firms, and they have lately increased their plant, so that they are now in a position to undertake machine-work for a greater number of firms and to guarantee good deliveries.

One of the firm's directors has been in close touch with the aeroplane trade for a number of years and is thoroughly competent to deal with such business. The Munday Company have always made a speciality of propeller bosses for standard

Gnome engines, which piece of information may be of use both to aeroplane firms and to Government departments who require these articles in a hurry.

Incidentally, the firm recently bought up the stock of the defunct Warne Cyclecar Co., and are turning out a neat, fast little car, with a Dorman engine, at about £125. It is just the kind of thing to suit a young officer as a runabout, and so is well worth investigating.

## A New Unit.

The small land-going tractor biplane with a 70-h.p. Renault, built by White and Thompson, Ltd., of Bognor, has made several successful flights during the past week, and still better results are expected when a new propeller has been fitted. One of the firm's seaplanes which passed her tests on Saturday, 13th, attained a speed approximating to that of the fast land scouts.

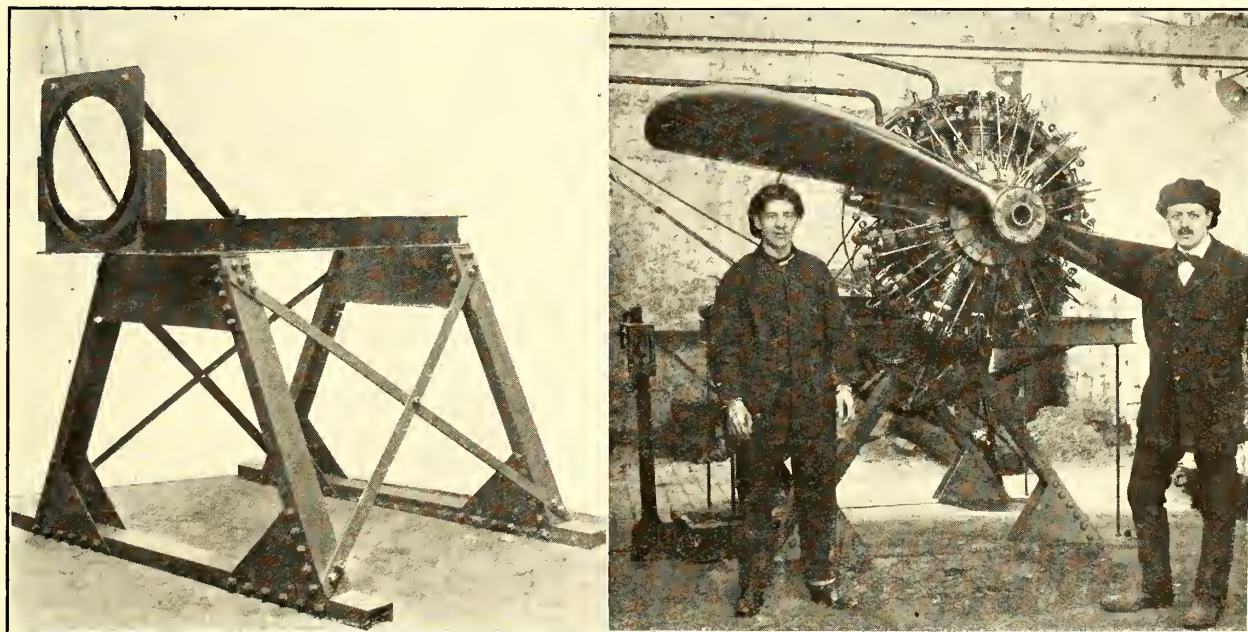
## Southampton District.

The improvement in the weather has produced general activity. On Monday Sopwith tractors were busy.

On Tuesday a new Sopwith-Sunbeam tractor was out on a preliminary test and flew very well indeed. At the same time a Sopwith "tabloid" came out and gave an amazing exhibition of climbing. This machine flew over Southampton and created great interest. Throughout the morning Sopwiths were continually active, at one time five being in the air at once. During the afternoon a new Wight seaplane of enormous size flew up Southampton Water.

On Wednesday a new Sopwith passed its tests in good style after flying all the afternoon. Other Sopwith tractors were out during the day.

Friday morning was foggy and a Blériot from the north had to come down low to take bearings, finally returning northwards.



The Dudbridge Ironwork's Test Stand, and a 200-h.p. Salmson engine under test.

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In the afternoon the large Wight flew up Southampton Water very steadily, but it seemed a trifle slow in turning, possibly owing to its large span.

Saturday afternoon was very busy. The big Wight seaplane was flying throughout this period. At the same time another Sopwith-Sunbeam tractor came out from Woolston and gave a very good account of itself, the speed being particularly noticeable for a fairly large machine. Other machines of the same type were out also.

On Sunday a small, fast Sopwith scout was out.

### School and Weather Reports.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
Hendon ... ..	Gale	Gale	Fine	Fine	Fine	Windy	Fine
East Coast ...	Windy	Windy	Fine	Fine	Dull	Fine	Fine
South Coast	Windy	Fine	Fine	Show'v	Fine	Fine	Fine
Lake District	Fair	Fine	Very Fine	Very Fine	Very Fine	Very Fine	Very Fine

**Hendon.**—AT THE GRAHAM-WHITE SCHOOL.—Instructors: Messrs. Manton, Winter and Russell. Pupils with instr.: Prob. Flight Sub-Lieuts. Mack (new pupil), Feeney, Hards, Hood, Jackson, Vernon and Greer. Strts. alone: Prob. Flight Sub-Lieuts. Ferrand, Hards and Hood. 8's or circs. alone: Prob. Flight Sub-Lieuts. Dunn, Ferrand, Irving, Morrison and Reid. Certificates taken by Prob. Flt. Sub-Lieuts. Irving, Morrison and Dunn (3 tickets). Machines: Four Grahame-White School machines.

AT THE BEATTY SCHOOL.—Instructors: Messrs. G. W. Beatty, J. Roche-Kelly and C. B. Proddger. Pupils with instr.: Messrs. Bond (39 mins.), Cornish (42), Roche (25), De Meza (12), Ormsby (35), Hayward (20), Fanning (8), Forbes (57), Bright (29), Laver (62), Vickers (5), Cooper (15), Leong (39), Alcock (25), Chapelle (30), Fraser (30), Whincup (15) and Bransby Williams (45). Machines: Beatty-Wright biplanes with dual control. Mr. Bransby Williams taking extra

practice previous to starting as Instructor at the School. Messrs. Perrot, Roche, Forbes, Bright, Laver and Leong are now ready for certificates.

AT THE RUFFY-BAUMANN SCHOOL.—Instructors: Messrs. E. Baumann, James Brothers and Mr. Virgilio. Pupils with instr. on 60-h.p. Caudron: Mr. Jackson (10 mins.), Cole (5), Roobaert (10), Hydon (15), Kenworthy (10), Bell (10), Blandy (8), King (10). Strts. or rolling alone on 45-h.p. Caudron: Messrs. Blandy (15 mins.), Hydon (20), Bell (12), King (20), Roobaert (16), Jackson (8), Cole (8), Kenworthy (8). M. Perrot (10 mins.) on 60-h.p. for extra practice.

AT THE LONDON AND PROVINCIAL AVIATION Co.'s SCHOOL.—Instructors: W. T. Warren and M. G. Smiles. Rolling alone: Messrs. Goodwin and Fanning. Strts.: Messrs. Henderson, Deschamps, England and Derwin. 8's or circs.: Messrs. Watson, Lincoln, Abbott, Noakes (extra practice). Machines: Two L. and P. tractor biplanes.

AT THE HALL FLYING SCHOOL.—Instructor: Mr. J. L. Hall. Strts. rolling: Messrs. Waterson (10 mins.), J. Furlong (26), A. Davy (39), Mitchell (41), Cini (37), Lieut. Raymond Barker (40). Mr. McConnochie 3 circs., 7 fig. 8's.; afterwards did certificate tests "A" and "B" in good style. Machines: Hall tractor biplanes.

**Windermere.**—AT THE N.A.C. SEAPLANE SCHOOL.—Instructors: Messrs. W. Rowland Ding and R. O. Lashmar. Pupils with instr.: Flight Lieut. L. L. Atherton, Lieut. T. Lindsay Bainbridge, Messrs. R. Buck, C. A. Barber, A. Johnson, F. A. M. Macintyre, J. L. Parker, G. L. Raiton, J. F. Ridgeway, P. D. Robinson, S. J. Sibley and H. Slingsby. Extra practice: Messrs. R. O. Lashmar, P. D. Robinson and J. L. Parker. Machines: N.A.C. propeller biplanes, Avro (dual control) tractor biplanes. Flying every day and nearly all day during the whole of the week. Mr. Rowland Ding took Lieut. Steele, R.N.F. and a Lieut., R.N. for passenger flights, and gave an exhibition to some friends. Steps have been taken to secure more machines and increase the instruction staff to four.

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"THE AEROPLANE," MARCH 24TH, 1915.

# THE AEROPLANE

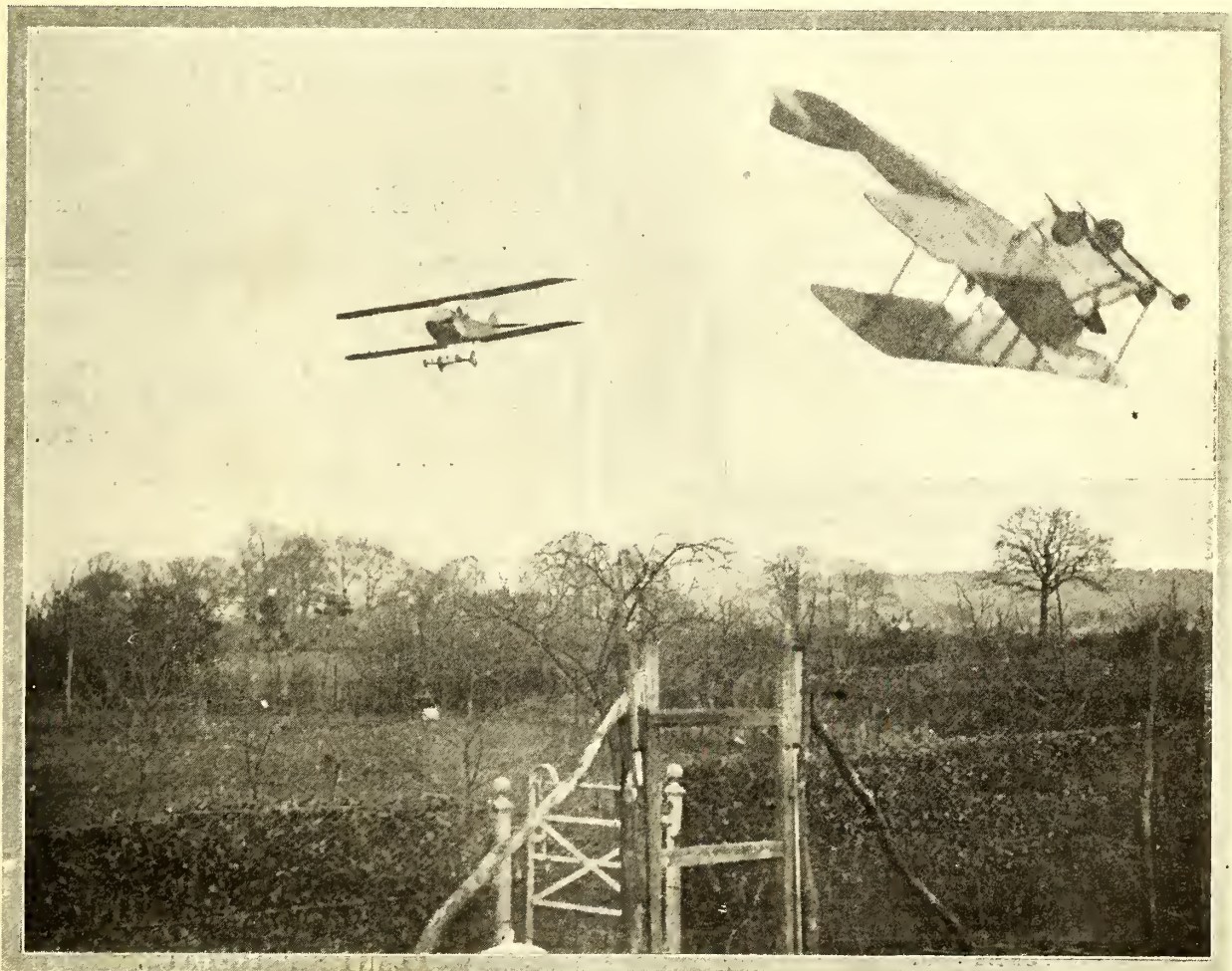
*Edited by C. G. GREY. ("Aero-Amateur")*



VOL. VIII. [REGISTERED AT THE G.P.O.] WEDNESDAY, MARCH 24, 1915.  
AS A NEWSPAPER.

No. 12

## GARDENING



Mr. F. P. Raynham on the little Martinsyde Scout, taking a trip round his garden just outside Brooklands. On the right the same machine is shown looping. The direction of the light and the reflections on the surface of the planes show that the machine was actually in the position in which it appears in the picture.



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## An Englishman's Privilege.

We certainly are an amazing people in this country. When at the beginning of the war our little Army, but all the army we had, was being handsomely beaten, we made far less fuss about it than we did fifteen or sixteen years ago about a certain skirmish at the Modder River, when one or two battalions lost rather a large proportion of men. Now, when the remnants of that little Army, plus other armies many times its size, wins a battle on a rather larger scale than the battle of Waterloo, no one shows the least sign of being elated, and most of the more responsible papers come out immediately afterwards with articles full of grave warning calculated to shed a gloom like unto that pervading London at night over anyone who might feel inclined to rejoice over the aforesaid victory. If they do not warn they grumble.

It is true, of course, that the winning fight at Neuve Chapelle only brought our troops back to about the same line they had held somewhere about last October, but the real point is that at the first serious effort to advance the men showed that they had lost none of their natural dash and determination through being planted in trenches for months on end, and that the whole Army would be justified in adopting the Norfolk Regiment's catch phrase, "We can do it," whenever called upon.

Lord Kitchener himself, who knows more about the true state of affairs than any living man, warns the nation, as a whole, about the gravity of the situation in general, and various papers warn various sections of the community about the grave dangers of industrial unrest, of commercial ineptitude, of mismanagement of engineering works, of shortage of war material, of slowness in recruiting, of lack of national solidarity, of undue levity, of the evils of drink, of the wickedness of extravagance, of the iniquities of night clubs, and so forth and so on, all of them warnings which are very well deserved, and should have an excellent effect when applied to the right individuals. In fact, it looks as if someone in high places had awakened to the truth of the statement made in this paper many months ago to the effect that if one wants to make an Englishman wake up one has to scare him to death first, and had instructed the Press accordingly. If only the late lamented prophet Jeremiah had survived, he might now have had the time of his life, for he would probably have received a colossal sum for filling a column a day in one or other of our leading papers with grumbles at things as they are, and warnings of evils to come.

As a matter of fact, at the present stage of the war, Jeremiads are of very much more use in this country than Hymns of Praise, or Invocations to Patriotism, or Calls to Arms, and if only the people of England can be thoroughly scared into realising that everyone must either work or fight, it will do more good than all the futile efforts of that peculiarly inept concern the Army Advertising Department, with its appeals to drivelling sentiment, shoddy patriotism, puerile humour, babbling bathos, and music-hall loyalty. Certainly, its poster, "Enlist for the Duration of the War, Discharged when Over," with the inference that one will be thrown aside like a worn-out shoe, is unintentionally

humorous, as is a recent effort, "Every recruit means shortening the War"—or words to that effect—happily forgetful of the logical retort that if there were no recruits at all there could be no war.

### Modern Prophets.

However, as Jeremiads are the fashion at the moment, and as it is an Englishman's privilege to grumble, it may be profitable to consider the aircraft question from the pessimist's point of view. To tell the truth, when one thinks of all that has been said, and written, about aircraft in war during the last three years, in which time aeroplanes and airships have been something like a working proposition, it is enough to drive anyone to pessimism or drink. Leaving aside the humble efforts of irresponsible scribblers like the present writer, look at the warning given in the lectures and speeches of officers like Sir John French, the late Sir James Grierson, Sir Horace Smith-Dorrien, Sir David Henderson, Colonel Sykes, Colonel Branker, Colonel Brooke-Popham, Commander Boothby, and sundry minor prophets, all of whom have indicated clearly during the three years exactly what aircraft would do in war. Not one of them would have to go back on any essential fact which he then pointed out if he had to speak on the same subject to-day. Yet there are good, religious people who tell one that it is blasphemous to say that prophets have actually existed since the period vaguely indicated by the pious phrase, "Scriptural Times." Prophetic inspiration, as a rule, is merely another name for a genius for common sense.

If those in political power during the three past years had listened to the voices of the prophets, we should by now have had an overwhelmingly large fleet, both of aeroplanes and airships. As it is, we talk enthusiastically of our ascendancy in the air, but that ascendancy was only won, and is only held, by the personal skill and bravery of our pilots and the genius of two or three aeroplane designers, supported by a wonderfully perfect little piece of organisation in the R.F.C. itself. It means working that organisation at terrific pressure, and overworking the pilots and their machines, whereas a huge organisation carefully prepared before the war and operating with the machine-like accuracy of the whole German army system would not only have given us similar control of the air, but would have left a handsome margin of aeroplanes and pilots with which to carry on offensive operations against troops, as well as keeping German aircraft on the ground.

### Waiting for The Day.

Recently an R.F.C. pilot was quoted by a highly reputable correspondent of a newspaper as wondering whether the notable absence of German aeroplanes of late was not due to the German being a fair-weather pilot and preferring to fly in fine weather. I have too much respect for the average intelligence of the R.F.C. officer to believe that any one of him expressed precisely that opinion, for the last man to under-rate the German is the man who has fought him. The German undoubtedly shines more as a fair-weather pilot, for his own weather conditions train him as such, but it is not a question of personal preference. If a senior officer asked him to fly in bad weather he would fly,



just as German infantry will walk into massed machine-guns when ordered. If he is not flying it is because he is not wanted.

One therefore draws the following inferences: The German Army holds securely to its defensive line of trenches. The German Staff is sufficiently well supplied by spies on land with information as to any big movements of the troops of the Allies to prepare in time for any attack on a big scale. Therefore why waste aeroplanes and precious petrol in merely patrolling the air? Neuve Chapelle was probably only a surprise to the Germans in that they had under-estimated the quality of British and Indian troops in attack, and had not reckoned on our sudden concentration of artillery, mostly at night, neither of which would have been discovered by aircraft.

Carrying the inference further, one concludes that the German Staff is saving its aircraft till it in turn intends to attack. Every aeroplane kept on the ground for a week at present is an aeroplane to be added to the fleet at the right moment. Meantime, the number of new German aeroplanes is steadily increasing. So is the supply of pilots. One assumes that before the great German attack is launched a huge force of aeroplanes will be sent up to sweep the R.F.C. out of the sky by sheer weight of numbers, as the German infantry swept our men before them from Mons to the Marne. Such an attack in force may be taken as indicating an attack on land to follow.

German pilots have already stated in their letters home, which have appeared in German papers, that their orders are to get information, and not to fight, so they run away when attacked. This may not be true in some cases, but it is probably true of the majority, for Quixotic chivalry has no part in the German's make-up. Therefore we may expect some day that German pilots will be ordered to attack, and the order will be obeyed.

Are we prepared for such an attack? We all hope and believe we are, but we should be very much more certain if those in authority had heeded the prophets of two or three years ago, and also if the best possible use had been made of the sources of aircraft production since war broke out. The facts about this matter cannot be published till after the war, and then, one fears, there will be much dirty linen to wash in public.

The point at present is that we are doing very much better than the early sins of the authorities deserve, and much worse than an efficiently organised nation ought to do.

#### **The Coming Raid.**

Another matter about which warning must be given is the coming of the promised aerial raid. Allowing that every airship and aeroplane that Germany possesses was permitted to get here and go home again unmolested, the net amount of damage done to London would not be enormous, and the genuine inconvenience caused to the running of the country from London as its nerve centre would only be temporary, but one would like to be certain that no such raid could possibly take place.

The activities of the enemy during the past week-end are not encouraging from our point of view. The Zeppelin visit to Paris, the earlier visits to Calais, where quite a considerable amount of damage was done to important railway communications, and the various aircraft continually prowling round our coasts do not fill one with confidence in the guard that is being kept on the other side of the Channel.

It may be, and one hopes it is, that we have a more than adequate force of aircraft and well-trained anti-aircraft gunners ready for any invasion and that nothing particular is being done across the Channel in the hopes that German invaders may be decoyed over here and neatly wiped out. But the fact that those at Paris and Calais escaped, in spite of being found by the searchlights, makes one wish that more attention had

been given to anti-aircraft guns, and to bomb-dropping from aeroplanes onto airship envelopes, in the past two or three years.

It must be at least four years since Germany openly produced anti-aircraft guns, and every picture-paper in the world illustrated them. It is much less than that since Colonel Seely announced, with his usual jauntiness, that he had been watching experiments with our first guns of this sort and that the results had been highly satisfactory—such a statement from him is not reassuring.

Probably we have enough guns and gunners for the job, though published reports of the performances of such guns on the Continent do not indicate much success.

Also, probably we have enough modern aircraft to destroy airships, for the persistent rumour in Service circles that a Zeppelin recently shot down two aeroplanes which attacked it has probably brought home to the authorities the folly of detailing under-powered pusher biplanes of an obsolete type to attack Zeppelins with ordinary rifles or machine guns, and has demonstrated the need for fast-climbing bomb-carriers, or high-speed gun-carriers (which could, at any rate, account for the crew in the gondolas), as the only type of any use at all against airships, and of similar fast gun-carriers, and racing tabloid scouts, to repel the big German aeroplanes.

Probably we have a sufficiency of these special craft, but we might have had an overwhelming force ready to deal invaders a certain and crushing blow if we had tackled the subject properly and in good time, as we were warned to do by the prophets.

#### **Comfort Ye My People.**

Much good might be done by serving out official information of a kind which would be comforting to our people and very much the reverse to our enemies. Instead of hiding all our doings so religiously we might turn them to good account. No one would propose to publish descriptions and photographs of the latest aircraft or guns which we have in store for the enemy's discomfiture, but it would be distinctly a good thing to describe and illustrate the excellent work which is being done at some of the numerous Naval and Military aviation schools, just to show the energy both officers and men are putting into their work.

Our papers are hardly permitted to illustrate the men of the New Armies on the march, and almost the most interesting pictures in the papers are photographs of German origin showing the enemy's troops at work and play, and their equipment. None of these give us any information of military value, but they do impress the average man with the idea that the German soldier is wonderfully well looked after, and apparently highly pleased with himself, and that is not calculated to inspire confidence in our early and complete victory.

It may, of course, be part of our policy to "make a poor mouth," partly to lure the enemy into the fatal error of despising us, and, secondly, to scare the Englishman into waking up—as mentioned before—but even so we do not seem to be going quite the right way to work. If we really want more men, and want our workmen to work their hardest, they should be scared by being told the worst side of everything, not by being kept in suspicious ignorance. And, after being scared, they should be encouraged a little.

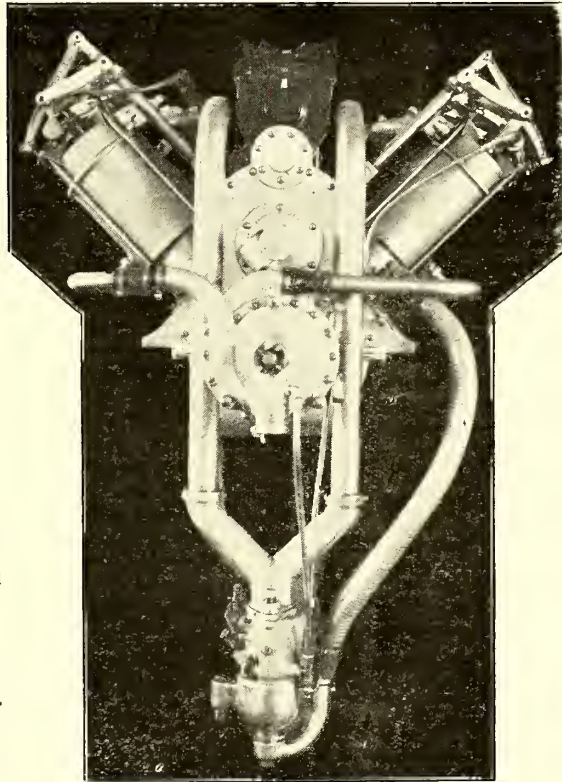
The enemy certainly does misunderstand us, as witness Major Morant's statement in the "Berliner Tageblatt" about our New Armies to the effect that "desertions have reached such a pitch that out of 1,000 men as many as 400 attempted to escape." It reminds me of a man in South Africa who was reported as "deserted" from a Yeomanry regiment on lines of communication, and was next heard of as a captain of Australian irregular horse, rather in front of the front. I could lay my hands on half a dozen battalions in

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England to-day ready to desert *en masse*, officers and all—to the front. It is said that quite a number of men have deserted and have smuggled themselves into other battalions which were on the point of going over to France.

There is also a story of a crack Territorial regiment which was so keen on fighting Germans and no one else that when it was told it had to go to Turkey there was almost a mutiny, and a strong protest was sent to one in high authority, who sent back the curt reply, "Turkey, or disband."

A little information of that sort, and a plain statement of the extreme gravity of the situation would do the British public good. An intelligent Press Bureau and Advertising Department could do anything it liked with the people of this country.

#### The Agony of Suspense.

Apart from the general public, those intimately concerned with our people flying abroad have a just grievance about the delay in publishing such information as is sent out.

For instance, on March 13th the Berlin official communiqué stated that two British aviators were shot down on the 12th and one on the 11th. It was not till the 15th that it was announced officially that two officers had been killed accidentally in an aeroplane—though the Casualty List was dated the 11th, from G.H.Q. in France.

By a pure piece of chance it is possible for this paper to explain the "accident," which was apparently due to the machine, in starting out over the enemy's lines low down in a mist, flying into the trajectory of a shell from one of our own guns. As suggested last week, the Germans evidently saw the machine fall and claimed the result as the effect of their own guns. However, the truth of the matter comes from an eye-witness of the tragedy.

In the other case an officer was killed on the 12th and his death was announced in the obituary column of the "Morning Post" on the 18th, yet his name did not appear in the official casualty list till the 22nd.

Surely if it was possible for the German official com-

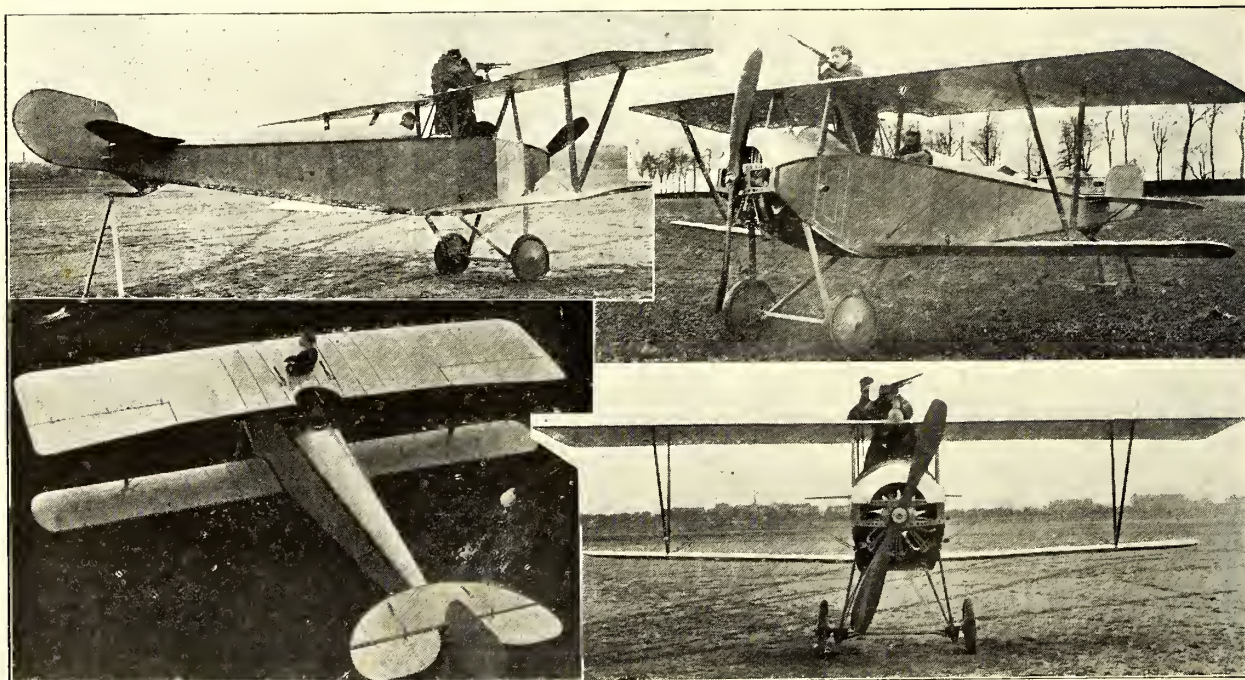
muniqué to make such an announcement on the 13th, even though the dates of the two occurrences were transposed, and if it could appear in the London evening papers on that day, it should be possible for our own people to do better.

The German communiqué of the 21st, published in London on the 22nd, states that another of our machines was shot down and the aviators captured—presumably on the 20th. Those who follow these matters closely recognise the accuracy and reliability of the German Headquarters communiqués—which are not actually surpassed in these qualities even by the French and our own communiqués—so everyone who has relatives or friends in the R.F.C. is left in suspense in these cases, wondering who the victims may be. Unless something unusual happens, that suspense will not be relieved till after the date on which this paper appears.

Doubtless some kindly senior officer of the R.F.C. has wired to the relatives of the missing officers saying that they have not returned, or that they have been observed to descend in the German lines, but that has been no consolation to the hundreds, one might even be safe in saying thousands, of people connected with R.F.C. officers who have not had such private information and who have seen the German communiqué.

Some special arrangement ought to be made about reporting R.F.C. casualties, for such a complaint does not arise about any other arm, and in the case of the R.N.A.S. the Admiralty see to it that reports are issued at once. Relatives of officers of artillery, cavalry, or infantry are warned promptly and privately of any mishap, and friends may well wait for the belated Casualty Lists, for the German communiqués only honour our aviators with special notice, and so no anxiety is raised about other units.

The R.F.C. would be the last people to claim any special favour in this respect, but they are exceptionally placed and therefore should receive exceptional treatment, and, anyhow, the Department of Military Aeronautics ought to be able to report casualties as quickly as does the Air Department of the Admiralty.—C. G. G.



Four views of the little Nieuport "I<sub>1</sub>" plane described on page 283; a compound of a "parasol," the "girder-wing" Deperdussin, and the "scientific" MacFie biplane of 1912 or thereabouts.



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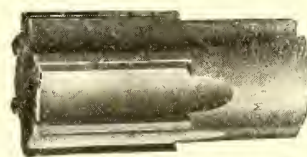
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## Naval and Military Aeronautics.

### GREAT BRITAIN.

From the "London Gazette," March 16th, 1915.

ADMIRALTY, MARCH 11TH.

ROYAL NAVAL AIR SERVICE.—The undermentioned gentleman has been granted a temporary commission as flight lieutenant: B. Binyon. Dated March 12th, 1915.

The undermentioned probationary flight sub-lieutenants have been confirmed in the rank of flight sub-lieutenant: F. W. Strong. Dated August 18th, 1914. G. H. Scott. Dated October 24th, 1914. R. M. Field. Dated October 28th, 1914. J. C. P. Wood. Dated November 10th, 1914.

The undermentioned acting flight sub-lieutenant has been confirmed in the rank of flight sub-lieutenant: F. J. Rutland. Dated December 15th, 1914.

The undermentioned probationary flight sub-lieutenant for temporary service has been confirmed in the rank of flight sub-lieutenant for temporary service: A. Q. Cooper. Dated November 14th, 1914.

\* \* \*

A Supplement to the "London Gazette" of March 16th, published on March 17th, contains the following military appointments:—

WAR OFFICE, MARCH 17TH.

REGULAR FORCES.—ESTABLISHMENTS.—INFANTRY.—KING'S (LIVERPOOL REGIMENT).—Second Lieutenant D. C. Ware is seconded for service with the Royal Flying Corps. Dated January 5th, 1915.

SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Second Lieutenant J. T. C. Moore-Brabazon to be lieutenant. Dated February 19th, 1915.

The undermentioned to be second lieutenants (on probation): O. D. Filley. Dated March 2nd, 1915. H. S. Coles. Dated March 3rd, 1915.

\* \* \*

A Third Supplement to the "London Gazette" of March 16th, published on March 18th, contains the following military appointment:—

WAR OFFICE, MARCH 18TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL REGIMENT OF ARTILLERY.—ROYAL FIELD ARTILLERY.—The undermentioned lieutenant to be captain: Dated December 18th, 1914: G. I. Carmichael, and to remain seconded.

\* \* \*

From the London Gazette, March 19th, 1915.

A Supplement to the "London Gazette" of March 19th, published on March 20th, contains the following military appointment:—

WAR OFFICE, MARCH 20TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—The undermentioned appointment is made:—

Equipment Officer—Second Lieutenant P. R. Grace, Special Reserve, and to be temporary captain. Dated January 16th, 1915.

\* \* \*

A Second Supplement to the "London Gazette" of March 19th, published last night, contains the following military appointments:—

WAR OFFICE, MARCH 22ND.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—The undermentioned sergeant-majors to be quartermasters, with honorary rank of lieutenant. Dated March 1st, 1915: J. Ramsay, J. Starling, A. Levick, A. H. Measures, F. H. Unwin, J. H. Wilford, W. R. Bruce, and W. J. Ryan.

SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—A. E. Snape to be second lieutenant (on probation). Dated March 15th, 1915.

NAVAL.

The following appointments were announced at the Admiralty on March 16th:—

ROYAL NAVAL RESERVE.—Acting Lieutenant H. F. Towler, transferred to Royal Naval Air Service as probationary flight

sub-lieutenant, and appointed to the "President," additional, for R.N. Air Service, to date March 14th.

ROYAL NAVAL VOLUNTEER RESERVE.—Temporary Sub-Lieutenant R. T. Hilliard Duff, transferred to the Royal Naval Air Service as probationary flight sub-lieutenant, and appointed to the "President," additional, for R.N. Air Service, to date March 15th.

\* \* \*

The following appointments were made at the Admiralty on March 18th:—Lieutenant-Commander—P. F. M. Fellowes, retired, to the "President," additional, for gunnery duties with Director of Air Department.

\* \* \*

The following appointments were announced at the Admiralty on March 19th, 1915:—

ROYAL MARINES.—The following has been approved:—

The undermentioned officers have been granted the temporary rank of captain whilst holding the appointment of flight commander in the Royal Naval Air Service: Lieutenants C. H. Collett, D.S.O., R.M.A., and C. E. Robinson, R.M.L.I. Dated February 23rd.

ROYAL NAVAL AIR SERVICE.—Mr. E. C. Bingham entered as probationary flight sub-lieutenant for temporary service, and appointed to the "President," additional, for the Royal Naval Air Service.

Temporary Midshipman F. G. E. Wiseman, R.N.R., transferred to the Royal Naval Air Service as probationary flight sub-lieutenant, and appointed to the "President," additional, for Royal Naval Air Service, to date March 18th.

Messrs. W. D. Wain, J. Forgan-Potts, C. V. Arnold, R. G. A. Baudry, and G. G. Dawson entered as probationary flight sub-lieutenants, and appointed to the "President," additional, for Royal Naval Air Service, all to date March 18th.

\* \* \*

The following appointments were announced at the Admiralty on March 22nd:—

ROYAL MARINES.—Honorary Second Lieutenant R. A. Reid transferred to R.N.A. Service as probationary flight sub-lieutenant, for temporary service, and appointed to the "President," additional, for R.N.A. Service, to date March 30th.

ROYAL NAVAL AIR SERVICE.—Flight Commanders—J. Dolben Mackworth has been promoted to the rank of squadron commander, and appointed to the "President," additional, for R.N.A. Service, to date March 18th; J. H. Lidderdale, to the "President," additional, for R.N.A. Service, to date March 19th.

Flight Sub-Lieutenant P. C. V. Perry, to the "President," additional, as instructor at the Central Flying School, to date March 19th.

Acting Flight Sub-Lieutenant S. Medlicott confirmed in rank of flight sub-lieutenant, with seniority December 4th, 1914, and reappointed as acting flight lieutenant, to date March 19th.

Messrs. H. Spencer Kirby and J. Turner Bone entered as probationary flight sub-lieutenants for temporary service, and appointed to the "President," additional, for R.N.A. Service, to date March 21st.

\* \* \*

The Secretary of the Admiralty makes the following announcement:—

Unfavourable weather has interrupted the operations in the Dardanelles, and, as seaplane reconnaissance has not been possible, the amount of damage done to the forts by the bombardment of the 18th cannot be ascertained.

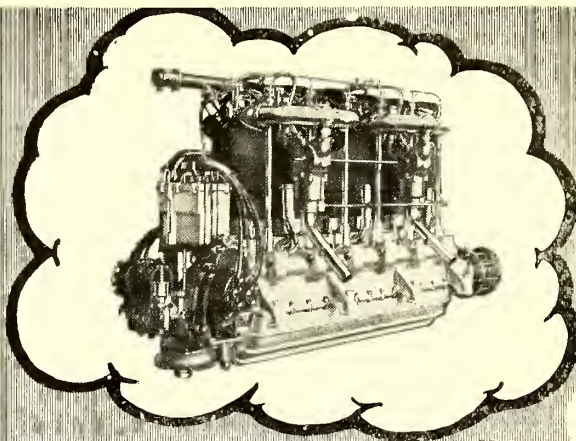
\* \* \*

The recruiting officer of the Naval Air Service Depot at Hendon issued a statement last week that there are vacancies for 400 air mechanics, who are required immediately at the depot. Pay is from 2s. to 4s. per day, with all found. Applicants should apply to the Recruiting Officer, London Aerodrome, Hendon.

\* \* \*

On the morning of Saturday, March 20th, a German aeroplane flew from the direction of Ostend to Kent and dropped

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several bombs over the shipping in the Downs. An Admiralty patrol boat is said to have fired on the visitor without effect, and several aeroplanes are said to have gone out in pursuit, but the German machine disappeared in the mist.

#### MILITARY.

The London Press Bureau announced on March 16th that the Field-Marshal Commanding the British Forces in France reported as follows under Monday's date (March 15th):—

(8) The Royal Flying Corps have secured further successes during the last few days, although fog has interfered materially at times. On the 12th the railway junctions at Don and Douai were bombed and damaged, and on the 13th a train in Don Station was blown up.

\* \* \*

The following officer's name appeared in the casualty list issued on March 17th:—

#### WOUNDED.

Sebag-Montefiore, Captain T. H., Royal Field Artillery.

Capt. Sebag-Montefiore will be remembered as a pupil at the Bristol School on Salisbury Plain in its palmy days.

\* \* \*

The following notice appeared in the obituary columns on March 18th:—

**CHOLMONDELEY.**—Killed in action on March 12th, Captain Reginald Cholmondeley, Rifle Brigade and Royal Flying Corps, eldest son of Major Reginald H. Cholmondeley, of Dorton House, Thame.

Reginald Cholmondeley was born at Tolmers, Herts, on September 26th, 1889, and took his certificate, No. 271, at Hendon, on a Grahame-White biplane, on August 13th, 1912.

Captain Cholmondeley was twenty-five years of age, and was the eldest son of Major Reginald H. Cholmondeley, of Dorton House, Thame (late Royal Inniskilling Fusiliers). He was educated at Eton and Sandhurst. He obtained his commission in 1909, and was appointed to the Royal Flying Corps in January, 1913. He was promoted to flight commander with temporary rank as captain in the Royal Flying Corps on May 1st of last year, and became captain in the Rifle Brigade on December 1st last. He was mentioned in dispatches on February 18th of this year.

He was one of the finest of the many fine fliers the R.F.C. has produced, and those who remember the early happy days of aviation at Lark Hill will recall his magnificent handling of the Henri Farman machines. At that time the officers at Lark Hill habitually flew far across country to spend weekends with friends, and Captain Cholmondeley was one of the best and most persistent cross-country fliers.

Popular with his brother-officers and with his men, a keen student of aviation, and a fine example of the best type of officer produced by our public school system, he will be deeply mourned by all who knew him.

\* \* \*

The following casualty in the Expeditionary Force is officially reported from General Headquarters, and was published on March 22nd:—

#### KILLED.

Cholmondeley, Captain R., Rifle Brigade and Royal Flying Corps.

\* \* \*

The following appeared in the obituary columns on March 23rd:—

**COCKERELL.**—On the 20th inst., in Egypt, suddenly, of acute smallpox, Samuel Pepys Cockerell, aged thirty-four, Second Lieutenant Royal Flying Corps, Military Wing, and some time of the Foreign Office, dearly loved and only son of W. A. Cockerell, late of the Foreign Office, and Mrs. Cockerell, of 24, Old Court Mansions, Kensington, W.

S. P. Cockerell was born in London on May 12th, 1880, and took his certificate, No. 132, at Lark Hill, on a Bristol, on September 12th, 1911. He was appointed to the R.F.C. Reserve on January 13th, 1913, and for active service on August 28th, 1914.

\* \* \*

It is with regret that one records the fact that Captain J. A. Kane, Royal Flying Corps, was killed while flying at Brooklands on March 22nd. This is the first death that has

occurred there since the Aerodrome was taken over by the Government last August, though some of the flying done there was of a kind which led one constantly to expect a fatal accident.

When at a height between one hundred and two hundred feet the Blériot parasol which Captain Kane was flying side-slipped and dived, and before the pilot could regain control it hit the ground. The machine was wrecked, and Captain Kane received injuries which were almost immediately fatal.

John Francis Aloysius Kane was born in Dublin on June 27th, 1880, and took his certificate, No. 834, on a Vickers biplane at Brooklands, on July 9th, 1914.

He was first appointed to the Devon Regiment in September, 1899, and was in the defence of Ladysmith, and at the actions of Lombard's Kop, Belfort, and Lydenberg, receiving both medals and six clasps. He was promoted to captain in the Devons on April 3rd, 1907, and was appointed to the R.F.C. as Flight-Commander on December 11th, 1914.

\* \* \*

So far as one can gather at the moment from evidence deduced from letters concerning the action at Neuve Chapelle, it appears that the accident which cost the lives of Lieutenant A. E. Morgan, R.F.C., and Lieutenant Irving, R.E., was due to their machine being hit by one of our own shells. During the operations which resulted in the capture of Neuve Chapelle the fog was so thick that our aeroplanes were compelled to fly very low, and it is known that one machine which was flying over the German lines unfortunately came within the trajectory of our own shell-fire and was hit. It was seen to crumple up and fall, and it is therefore permissible to assume that this was the machine containing the two officers in question, for in such an event a fatal result would certainly follow, and no other fatality in the Flying Corps is recorded on or about that day to account for the occurrence, except that of Captain Cholmondeley, who was admittedly shot down by the Germans.

\* \* \*

It is reported from Holland that two British officers who descended in the province of Zeeland on March 22nd have been sent to Groningen on parole. They landed owing to motor trouble.

It is also reported that the machine was numbered 9,070/750, which does not look like British numbering.

\* \* \*

The marriage between Second Lieut. Herbert Prinsep Somers Clogstoun, Royal Flying Corps, Special Reserve, eldest son of Mr. Herbert Cunningham Clogstoun, C.I.E., and Christabel Margaret, eldest daughter of the late Sydney H. Carver, of Alexandria, Egypt, and Mrs. Carver, of Chettle Lodge, Dorset, took place very quietly on March 23rd at Downton, Salisbury.

\* \* \*

An R.A.M.C. Territorial, now on active service in France, writes:—"March 10th.—Few aeroplanes lately on account of weather. Saw one of the big Voisins 'blindées' this afternoon. They show a fine turn of speed for their size, and make a deuce of a row. Don't know what the engine was. It sounded like a monosoupape Gnome. [It may have been a Vickers gun-carrier.—Ed.] The anti-aircraft section here are a happy crowd, and, as usual with all connected with flying, think it's 'their war,' and everybody else is merely incidental. I don't approve of Mr. Bayons' views in *THE AEROPLANE*. One thing he forgets is that a nation such as Germany will not be content to live under a state of rigid economy in the food line. A certain section of the people will always demand its luxuries, and if these are not forthcoming this class will grow discontented and make itself felt."

The writer goes on to narrate how his section fought the anti-aircraft section of the local R.H.A. at football. During most of the match shells were falling in the next field, but they soon got used to it and beat the anti-aircraft section by 3 goals to 0.

\* \* \*

The Special Correspondent of the "Morning Post," who recently visited General Headquarters in Northern France, reports the following remarks by one of our aviators, which seem worthy of reproduction:—

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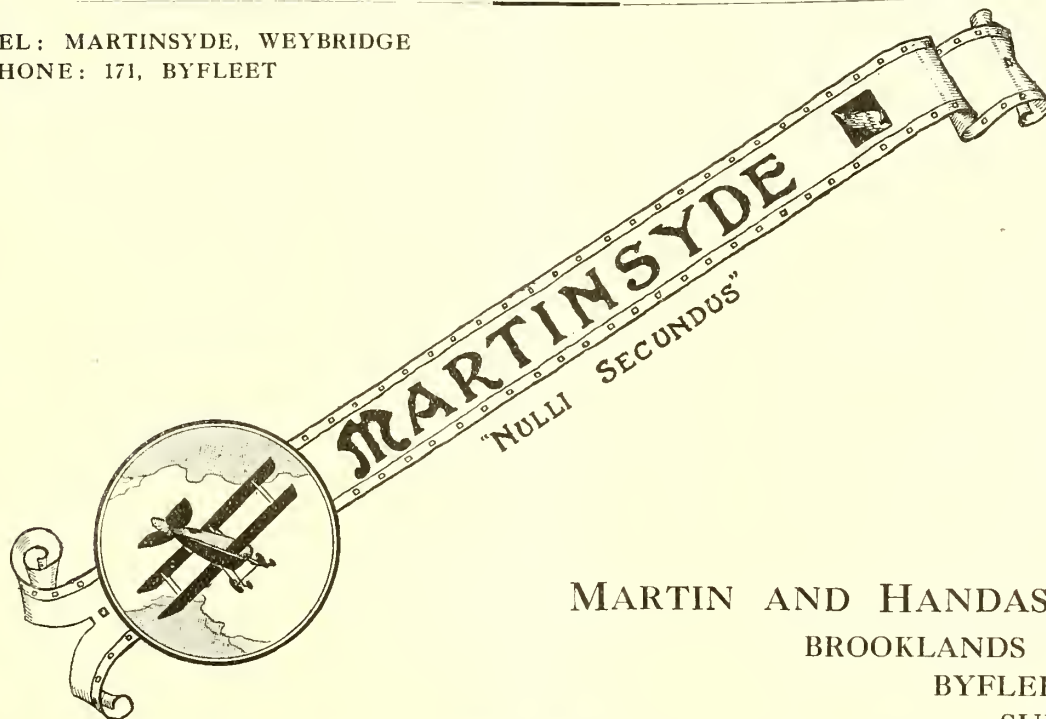
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"We're all glad to have little to worry us now but the guns," said one of the most famous of them. "They shoot a lot better than they used, of course, and shrapnel through your planes is quite sufficiently exciting, but it's nothing to what it was in the good old days when they couldn't shoot for nuts. Then everyone had a pot at you, your own side just as often as the other, and any death was good enough for you when you landed. It was pitchforks most often, or any other handy agricultural instrument, and no matter in what unlikely spot you landed a burly French farmer was down on you the next instant, like some great spider out of the hedges, anxious to do his country a service by letting out your vital juice. They all seemed to consider the one safe course with anything so uncanny as an airman was to make an end to him first and inquire about him afterwards. Twice when I got shaken up on landing by a rough bit of plough I came to to find a circle of scythes and billhooks round me, and no one the least concerned by the circumstance that I was upside down.

"The dear old French Territorial also felt in duty bound to have a shot at you, and the problem of how to get out of the air alive, in order to deliver your news, was, owing to the keenness of your friends to kill you, a problem that confronted you from the moment your news had been acquired, and led you in a search for uninhabited places, or where there was nothing worse than a bull to gore you, till your petrol was almost out.

"Now, of course, we are in clover. If you are a friend you're welcome, and if an enemy you don't amount to much. The magic glamour has been rubbed off our wings, and we are merely one of the few interesting objects left on the battlefield. I mean, we are about the only combatant left that you can watch being shot at, and whose fortunes you can follow from a quite safe distance with interest and amusement. It's easy to judge just how near the shrapnel comes to us, and our antics when a big shell opens an air hole under us appeal, I believe, even to men with no sense of humour. For the rest everyone wishes now they had taken up such a safe line as flying while there was yet time."

The "Morning Post" man also tells the following story, which has its points, though officers who have been severely "Archied" may not entirely agree with its conclusions:—"A youngster, who had joined a Line regiment in the early days of the war . . . in charge of a machine-gun, was left by accident in the trenches when his battalion was withdrawn. . . The boy had thus, as his earliest experience, a continuous spell of forty-three days in the trenches. . . Sympathy for what he had endured sent him home on short leave, and when his week-end was over he realised that something unpleasant had happened to his nerves. 'I simply can't face the trenches again,' he admitted. 'I can't get the sound of the bullets out of my head.'

"He might have had more leave, but he asked instead to be transferred to the Flying Corps, and, having taken his certificate before the war, the transfer was granted him. He is now watching the Germans from a few thousand feet above them, and the change of air has worked just the relief required. He can still hear the bullets, but now they are beneath him, and, as he explains it. 'You can always put her head up to get out of them, but you couldn't do that in the trenches.'

"Psychologically, aeroplaning on active service as a rest cure for shattered nerves may deserve consideration."

\* \* \*

Speaking of the preparations for the British offensive movement which commenced on March 10th, the military correspondent of the "Times" says:—"To concentrate an unusually large force of guns without notice of the fact reaching the enemy argues much skill in the preparation and excellent staff work. We must remember how flat the ground is, how closely it is watched, how the giant periscopes of the Germans assist observation, and how much one bold airman might have discovered had he been busy on the evening preceding the attack or at dawn. It is not easy to mass troops near the advanced trenches, but the custom of our airmen is and has been to attack hostile airmen whenever and wherever they appear, and this has made the latter shy. Much less often than our men are they in the air."

"The work of the airmen also deserves notice. On the 10th some unnamed hero descended within 150 ft. of the ground and destroyed one of the piers of the important railway bridge at Menin. Others wrecked Courtrai Railway Station. On the 12th they bombed and damaged Don and Douai Stations, and on the 13th wrecked a train in Don Station. German accounts state that General Bendler, chief of the railway section of the Great General Staff, was killed by a British shell, and he may have been caught by one of Sir David Henderson's birds. The presence of Bendler in Flanders seems to show that large movements by rail are projected on this side, but they will now encounter more difficulties than were anticipated."

\* \* \*

#### AT SEA.

On March 18th an inquiry was held at South Shields concerning the death of Henry Chessnell, able seaman, of the s.s. "Blonde," which was attacked by a German seaplane off the North Foreland on the 17th.

Evidence was given that he had been in poor health. When the captain called the crew Chessnell came up looking very scared. He told the crew that the bombs had greatly affected his nerves. The following day he collapsed and died in five minutes.

A medical man deposed to finding the deceased suffering from fatty degeneration of the heart. The jury returned a verdict that death was accelerated by shock caused by the explosion of bombs thrown from an enemy aeroplane.

\* \* \*

It is reported that on the evening of March 17th an aeroplane was seen approaching Aldeburgh. The sound of the engine suddenly ceased and it is believed the machine fell into the sea. The Aldeburgh lifeboat was launched, but returned after a three hours' fruitless search. A mine sweeper reported having seen the aeroplane pass proceeding towards the land, eventually being lost sight of.

[As this occurred on the same day as the incident mentioned above, it seems that several German aircraft were off the British coast at that period. The second incident may be connected with the same machine, but the time elapsed between daylight and 8 p.m. would in that case indicate a very long flight, assuming that the machine had started from the Belgian coast.—Ed.]

#### FRANCE.

The French official communiqué of Wednesday last says:—Paris, March 17th.

There has been an artillery duel in the Woevre, and one of our aviators has dropped bombs on the barracks at Colmar.

\* \* \*

The official communiqué of the afternoon of March 18th says:—

One of our aviators bombarded the railway station at Conflans.

\* \* \*

The official communiqué issued on the evening of March 18th says:—

A Zeppelin dropped some bombs on Calais (on the night of the 17th), aiming at the railway station. No serious material damage was done, but seven employees were killed.

\* \* \*

The official announcement regarding the visit by Zeppelins is as follows:—

Paris, March 21st.

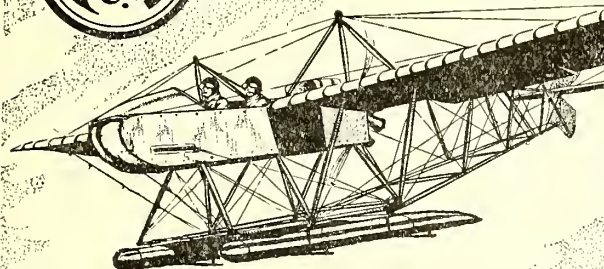
Between 1.15 and three o'clock this morning four Zeppelins started for Paris, coming from the direction of Compiègne, and following the valley of the Oise.

Two of them were compelled to turn back before reaching Paris, one at Ecouen, the other at Mantes. The two others were attacked by anti-aircraft guns and only passed over the outlying districts of the north-west of the city and the neighbouring suburban districts. They withdrew after having dropped a dozen bombs.

The damage to property was of little importance. Seven or eight persons were struck, only one being seriously injured.

Various anti-aircraft posts opened fire on the Zeppelins.





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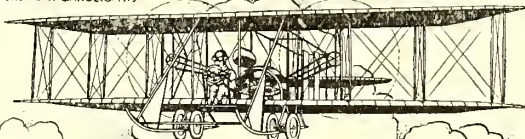
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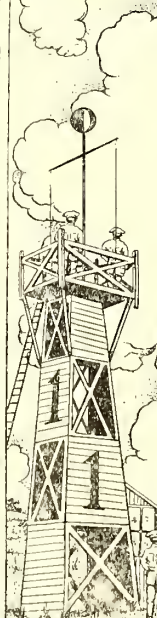
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which were constantly lighted up by searchlights. One of them appears to have been hit. Aeroplane squadrons took part in the action, but mist hampered them in their pursuit.

To sum up, the Zeppelin raid on Paris was a complete failure, and only served to demonstrate how well the defensive arrangements adopted work. The population of the city remained perfectly calm.

On their way back the Zeppelins dropped a dozen incendiary or explosive bombs on Compiègne, which only did a little unimportant damage. Three other bombs were dropped on Ribecourt and Dreslincourt, to the north of Compiègne, without any result.

\* \* \*

A second official communiqué gives the following further details:—

At Asnières eight bombs were dropped and three people were wounded. At Neuilly a slight fire was caused in a house, but was rapidly put out. Nobody was hurt. At Levallois a one-storey house was destroyed. At Courbevoie a workman received trivial injury and another slight injury.

In Paris bombs were dropped in the rue des Dames and the rue Ducloux. No victims. In the Department of Seine-et-Oise and at Saint Germain Zeppelins were reported between half-past one and two o'clock. At Mantes they were fired at from the fort. At Poissy three bombs were dropped, two of which were explosive bombs. No victim. The passage of Zeppelins was likewise reported from Domont and Argenteuil.

[It is stated that a westerly wind was blowing, and that the vessels came down wind from the West, in the manner suggested in this paper as probable in an attack on London. The names of the places on which bombs were dropped show that the intention was to destroy factories which would probably be at work on war material. Levallois, Neuilly, and Courbevoie correspond fairly well to Woolwich, Erith, and Dartford in this country.—Ed.]

\* \* \*

The following official communiqué was issued at 11 p.m.—

Paris, March 22nd.

In consequence of the checks sustained at La Boisselle, the Germans have bombarded the Civil Hospital at Albert, over which was flown the flag of the Geneva Cross. Firing took place after it was sighted by an aviator, and several projectiles were thrown. Five elderly persons were killed and several more wounded. The lady superintendent has been grievously wounded.

French aviators have actively and usefully replied to the futile raid of the Zeppelins on Paris on Sunday night.

In Belgium, on Sunday, 20 bombs were thrown on the aerodrome of Gits, on the railway, and on the stations of Lichterfelde and Essen.

An aviator was pursued as far as Roulers and was fired at with carbines. Ten shells of "90" have been thrown on Merkem Station, and on that of Wyfvege.

Farther to the south, near La Bassée, two enemy aviators were chased, and they were obliged to return to their lines. Roye Station has been effectively bombarded.

In the valley of the Aisne an aviator was put to flight by two of our aviators.

In Champagne 500 small arrows were discharged on a German captive balloon.

Several shells were thrown on Bazincourt Station and on the enemy's batteries at Brimont and Vailly, and a German aviator has been chased to the north of Reims.

In Alsace, Sergeant Falze, pilot, and Sub-Lieut. Moreau have struck down an aviator on the railway west of Colmar. Six bombs have been thrown on Cernay Station. Mullheim barracks and Altkirch Station have been effectively bombarded.

On Monday, in the daytime, we bombarded in Belgium Stadem Station, near Roulers, and various cantonments. Several bombs have been thrown with success on the aviation field at La Bruquette, near Valenciennes.

In the region of the Aisne, La Fère barracks, Anizy, Chauny, Tergnier, and Coucy-le-Chateau stations have been struck by our aviators.

In Champagne the aviation field and the munition depots of Pontfaverge have received day and night several bombs of "90." Conflans-larny and the neighbouring ways have been bombarded with 40 bombs. The effectiveness of the bombardment has been verified.

Fribourg-en-Breisgau barracks and station have received eight bombs.

\* \* \*

It is reported that on March 16th a German aeroplane passed over the village of Dampierre les Bois, in the Belfort district. The only target available was a funeral procession, and on this the German aviator dropped two bombs. Possibly from his altitude he took the procession to be an ammunition convoy. Fortunately, the bombs did no damage.

\* \* \*

The "Journal" learns from Nancy that on March 20th two German aeroplanes flew over the town. After being violently bombarded they retired without throwing any bombs and without being hit.

A Zeppelin passed over Calais at about 12.15 a.m. on March 21st. Searchlights soon found her, and anti-aircraft guns kept up a brisk but harmless fire for some 20 minutes. No bombs were dropped, and the ship merely went on her way, intent on other business. Subsequently, it was reported that she had attacked Gravelines, and afterwards taken part in a raid on Paris.

\* \* \*

Writing on the Zeppelin affair, the Paris correspondent of the "Morning Post" says:

"As for the duel between airship and aeroplane, it still remains an open question. For some reason the Allied Powers have chosen the aeroplane as their weapon, and have left the dirigible balloon to their opponents. France was the pioneer in the matter of the dirigible balloon, but she has made very little attempt to develop the invention."

[The correspondent evidently does not know what good work has been done by the French and British airships, which in actual value have beaten the Germans.—Ed.]

"M. Louis Capazza, who has always been a partisan of the lighter-than-air as opposed to the aeroplane, said to me to-day:—'Well, they have come, as I knew they would come. Their airships have the command of the air from their point of view, just as our aeroplanes have from ours. The aeroplane is, in my opinion, no reply to the dirigible; the only reply is a larger and more heavily-armed airship. If my ideas had been adopted we should have seen the real battle in the air, and it would have been proved, just as it has been shown in naval warfare, that the ship which is more weakly armed is absolutely at the mercy of its more powerful opponent. It is important that everyone should realise the advantage possessed by the Germans in this particular kind of warfare.'"

[These words of M. Capazza are worthy of note.—Ed.]

"An aeroplane may set out to attack a Zeppelin, but its advantage in speed does not exceed the percentage of six to nine, and while it is rising the dirigible, even if it does not use its guns, can easily escape. Every airship is invulnerable until the enemy has risen above it, and there are very few pilots who can maintain control of their machines when the altitude exceeds 3,000 mètres, an altitude that the Zeppelin can easily attain.'"

[One must, of course, discount this remark on account of M. Capazza's prejudice in favour of airships, and also because he is probably ignorant of the precise performances of the latest high-speed "tabloids" turned out as airship destroyers.—Ed.]

\* \* \*

The newspapers state that a woman named Poisson died of fright caused by the explosion of a Zeppelin bomb near her house in the Rue des Dames. The story is Reuter's, so the lady may only be a Poisson d'Avril a few weeks too early.

#### GERMANY.

The Berlin official communiqué of March 18th says:—

French aviators dropped bombs on the open Alsatian town of Schlettstadt, of which only one was effective, exploding on a school, killing two girls and seriously wounding ten.

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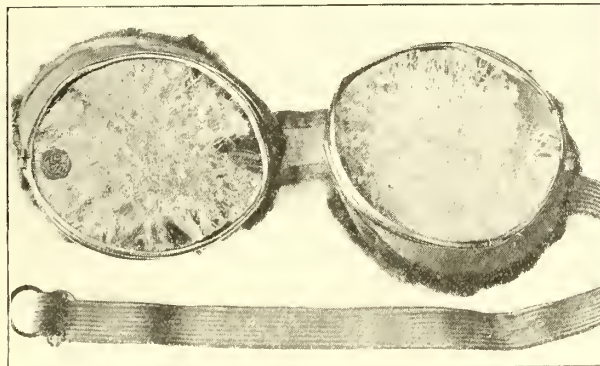
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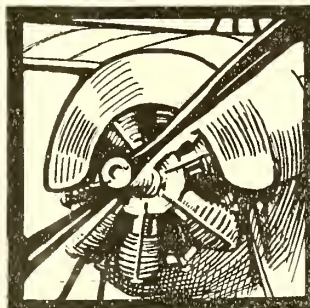
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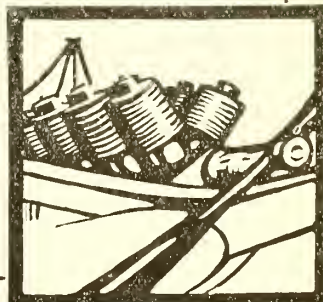
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As a reply the fortress of Calais was last night bombarded with bombs of the heaviest type.

\* \* \*

The German official communiqué of March 21st says:—

South-east of Ypres a British aeroplane was shot down and the aviators captured.

By way of reply to outrages of French aviators on the open Alsatian town of Schlettstadt, some heavy bombs were dropped last night on the fortress of Paris and the railway junction at Compiègne by our airships.

\* \* \*

The special correspondent of the "Daily Chronicle" at Geneva reported on March 21st that at Habsheim, near Colmar, three French aviators from Belfort destroyed two new army Taube machines and four sheds. Several regiments of recruits, who were manœuvring under staff officers, fled into the forest.

One pilot, who was flying low at 500 metres, had his machine riddled with bullets, but all returned safely.

#### RUSSIA.

Apropos the capture of Przemyśl on March 22nd, it is reported that on March 19th (Friday) besides the usual aeroplane three balloons of old type left the fortress, carrying officers and mails. Owing to a change of wind, all three were carried into Russian hands, one landing 190 and another 168 miles away, both in the neighbourhood of Brest-Litovsk, the third coming down 84 miles to the north-east of Przemyśl, at Sokal, near the old frontier line of Russia. The local peasants captured both balloons and aeronauts.

[Galicia, being old Russia, one is presumably correct in locating this paragraph under the Russian heading, whether Russia manages to hold the country or not.—Ed.]

#### BELGIUM.

The special correspondent of the "Daily Telegraph" at Havre reported on March 17th that a Taube, which dropped eleven bombs on Poperinghe, killed eight people, including three children, one woman, and two soldiers, whilst twenty persons, of whom seven were children, were wounded. One of the soldiers had both his legs shattered, and an immediate

amputation was deemed necessary. He died during the operation. Another soldier, who was injured, also died.

\* \* \*

The Sluis correspondent of the "Tyd" reports that British aviators have again been very active along the coast. On Monday the 15th a British air squadron appeared between Ostend and Knocke and dropped bombs on Ostend.

Some German aeroplanes ascended, but were unable to drive away the enemy. One Taube lost its way and drifted over Dutch territory. It succeeded, however, in returning.

\* \* \*

The special correspondent of the "Daily Telegraph" states that at Knocke a preliminary reconnaissance discovered the German batteries and defence works. Shortly afterwards several machines appeared and threw a large number of bombs, the explosions of which proved that great damage had been done to the observed positions. From an observation balloon at Zeebrugge the Germans detected the approach of the air squadron, and several machines were sent up in the hope of driving it off.

\* \* \*

The "Morning Post" correspondent at Amsterdam reported on March 17th:—

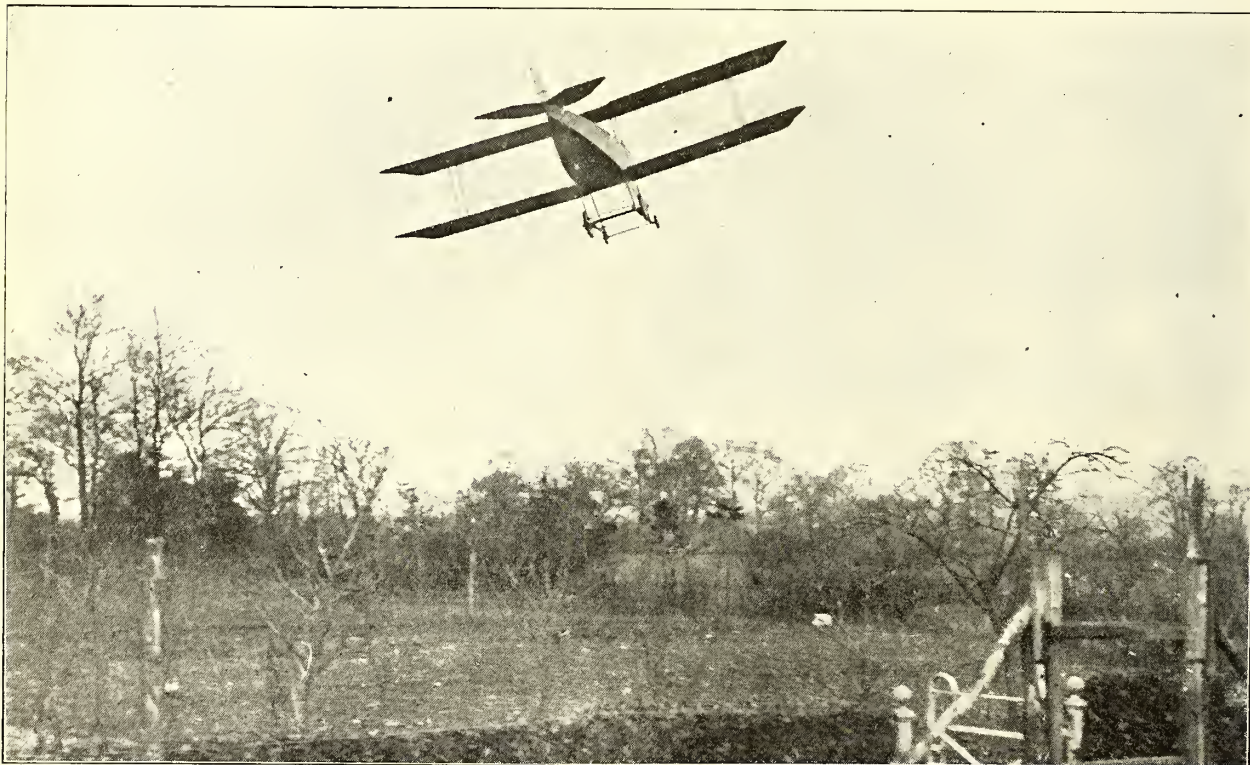
"British aviators appeared on Monday over Ostend and Knocke. They also dropped several bombs on German fortified positions along the coast."

\* \* \*

Mr. G. F. Steward of the "Daily News," telegraphing from Rotterdam on March 18th, says that a fleet of Allied aircraft was sent along the coast on the 17th on a big scouting and offensive mission, preparatory to the general operations now proceeding. Particular attention was paid to Ostend and Knocke, where, it is said, several bombs were thrown, particularly in the neighbourhood of Ostend, whence troops were being moved.

\* \* \*

It is reported by travellers from Liège to Maastricht that on Saturday 20th a Zeppelin was wrecked at Liège. No reliable details are to hand.



In this picture, a companion to the Frontispiece, the Martiasyde is shown still lower down, photographed from the same spot a few moments later, after Mr. Raynham had circumnavigated the estate which he shares with sundry other aviators.

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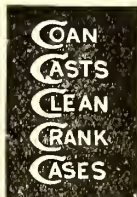
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**ITALY.**

It was reported from Paris on March 22nd that telegrams from Rome state that in the last few weeks 220 aviators have received their pilots' certificates, and the Italian Army now has at its disposal 300 aeroplanes and 20 dirigibles.

[The 300 aeroplanes are a possibility, but the number of airships is probably arrived at by the usual journalistic method of counting the last "series" number as representing the number existing.—Ed.]

\* \* \*

Another new weapon of certain destruction, for use against the same "mechanical birds" which this silly world was all anxious to breed and nurture so short a time ago, has been patented at Pisa. The inventor's name, and presumably his motto too, is Acconci.

It consists of a light undercarriage supporting a flat circular metal floor, on which is a movable platform with 4 equidistant machine guns (or light cannon) firing simultaneously. Both the floor and the platform are stated to be rapidly inclinable—almost to the vertical. A lens projects the whole vault of the sky onto a mirror. Centre your hostile aerial visitor in this mirror by means of a dual-action hand-lever, press the button, and if in range he is certain to be quite uncomfortable.

We are not told how the 4 mitrailleuses are spaced out on the platform—only that they are fixed as regards one another so that the chance of the aircraft escaping all of them may not be increased by experimenting operators. Hustle up and try, Signor Acconci, before the supply of hostile dirigibles gives out!

M.I. dirigible, which now claims to detain the world's record in altitude, has benefited by the modifications and re-designing effected. She appears to have improved rudders, her nose and nacelle attachment having received attention too.

T. S. HARVEY.

**DENMARK.**

It is reported that a Zeppelin was observed on March 18th over the Femernbelt, coming from the east. Thence it passed over Roedby Harbour and disappeared in a westerly direction. It is supposed that it was on its way to the North Sea and England.

**HOLLAND.**

It was reported from Ymuiden on March 21st that the crew of the "Zevenbergen" state that when lying in the Downs on Saturday an aeroplane threw four bombs, but the crew did not see if the bombs took effect. English merchant vessels, which were followed by the Taube, fired at it. The crew of the "Zevenbergen," were greatly excited and painted on the deck of the steamer the name "Zevenbergen," Rotterdam.

It was reported from Amsterdam on March 22nd that the "Zevenbergen," when about 8 miles west of the Noord Hinder bank, saw a Taube aeroplane, which dropped two bombs, one falling about 40 feet to starboard of the steamer, while the other fell about 20 ft. ahead, exploding in the air. The Taube followed other vessels, recognisable by the white funnels as British from Leith, at which the aeroplane had previously thrown bombs. The "Zevenbergen" was then showing three Dutch flags on the masts, two on the bridge, and three spread out on the deck.

[This may be merely another version of the Ymuiden story, or the "Zevenbergen" may have been in luck and have had two performances in the day.—Ed.]

The "Telegraaf" states that the German attacks on the Dutch steamers "Zaanstroom" and "Batavier V." are under discussion by the Dutch Government. The steamship companies are to make reports, and the Dutch Minister in Berlin has been instructed to ask the German Government for an explanation. The Dutch Government will apparently not take any further action until all the details have been collected. It does not believe that the German authorities will confiscate the ships. [It is hardly likely that the Dutch Army will invade Germany, in any case.—Ed.]

The steamer "Elfland," sailing under the English flag, and chartered by the American Relief Committee to carry corn for Belgium, arrived at Rotterdam, having been attacked off the Noord Hinder lighthouse by a German aeroplane, which dropped some bombs without hitting the ship.

**EGYPT.**

The following statement was officially issued at Cairo on Saturday:—

Since the last official communiqué there has been nothing to report. Patrol and aeroplane reconnaissances show that there is very little activity amongst the enemy's outposts, which remain in the same places as before, some four days' march from the Canal.

**TURKEY.**

A message from Sofia, dated March 20th, states that fifteen German aviators in the service of Turkey have left Constantinople to return to Germany. [It is more probable that this represents three aviators and a dozen mechanics.—Ed.]

\* \* \*

The "Morning Post" correspondent at Athens reported on March 17th that on Monday evening, March 15th, a British seaplane, whilst returning from a reconnaissance, fell into the sea at the mouth of the Straits. The aviators, who were only bruised, were saved by destroyers.

**CANADA.**

The "Daily Intelligencer," of Belleville, Ontario, says:—Sarnia, Ontario, Feb. 25th:—"A fact not generally known is that Countess Zeppelin, wife of the inventor of the famous Zeppelin aircraft, is a Canadian girl. Countess Zeppelin was the daughter of the late W. H. MacGarvey, formerly of Petrolia, who died recently in Austria, where he had become one of the leading oil magnates of the country. She was born in the village of Wyoming, Lambton County, in 1875, going to Europe with her father at an early age."

The Montreal "La Presse" of March 5th reports:—"Lacolle, March 4th.—An aeroplane has flown over the country a mile from here at six o'clock this morning. Several persons worthy of trust are assured of having seen it at a great height and of having heard the sound of its helice. The machine was steering towards the west."

**SOUTH AMERICA.**

The "Standard," Buenos Aires, a flourishing English paper for Britishers in the Argentine, published the following on Monday, Feb. 22nd:—

Aviation.—In spite of the Carnival, movement was noticeable yesterday at the Ounlnies (?) Aerodrome. Pilot Instructor Sanchez made a notable flight of about 25 minutes' duration over the neighbourhood of the aerodrome early in the morning. In the afternoon Sanchez, accompanied by school pupils, made a number of training flights. Just before dusk, Sanchez alone executed a number of spiral and banking manoeuvres on the school 50-h.p. biplane. The descent was accomplished safely, volplane fashion. A "dia de descanso" was observed yesterday at the Palamar Military Aerodrome.

**U. S. A.**

"Vancouver Daily Province," Feb. 23rd.—"N.Y., Feb. 23rd.—Spain has authorised the purchase in America of 12 army aeroplanes and tools and machinery to the value of \$2,000,000, according to Henry S. Moos, a Spanish engineer who arrived here to-day."

**AUSTRALIA.**

The "Argus," Melbourne, Jan. 25th, says:—"An effort is being made to establish a permanent aero association in Victoria with the object of stimulating public interest in the art of flying and promoting the science of aviation. A meeting was held at London House, 5th floor, 97, Elizabeth Street, in order to discuss the proposal. All interested were invited to attend."

**The Royal Flying Corps Aid Committee.**

Lady Henderson has asked us to make it known that the Aid Committee of the Royal Flying Corps left No. 3 Queen Anne's Gate on Tuesday, March 23rd.

By the kind permission of Lady Battersea, in future the new address will be Surrey House, Marble Arch, and all letters, parcels, etc., should be addressed accordingly.

A full list of subscribers to the Fund can be seen at any time at the following places:—

The National and Provincial Bank, 6, Victoria Street, S.W.

The Office of THE AEROPLANE, 166, Piccadilly.

The Royal Aero Club, 166, Piccadilly.

**The R.N.A.S. Comforts Fund.**

During the week consignments of warm garments have been sent (per request) to R. N. Airship Section X—and also to H.M.S. "Riviera" (seaplane carrying ship). The men at Dunkirk have applied for a gramophone to assist in whiling away the time when flying is impossible, and this has been duly ordered. The following cash contributions have been received this week:—South Coast Aircraft Works, £9; Girls' Grey Coat School, £4; White and Thompson, Ltd. (Employees), £2 10s.; Mr. Eric Dower, 10s. 6d.; Mr. Harry York, 10s.; Vickers Ltd., Erith (Woodworkers, 14th contr.), 6s. Total for week, £16 16s. 6d. Grand total to date, £887 6s. 7d.

Further contributions in cash and kind should be sent to Mrs. Sueter, The Howe, Watlington, Oxon.

**Congratulations.**

WOOD.—On Thursday, 18th inst., at 40, Cumberland Mansions, Bryanston Square, W., Ethel, wife of Major H. F. Wood, 9th Lancers, of a daughter.

**Pacifism and Aviation.**

The following letter has been received from a gentleman writing from Gonville and Caius College, Cambridge:—

"Sir,—In a recent issue of *THE AEROPLANE* you pointed out—doubtless for the benefit of those who had not made the discovery for themselves—the fact that the paper had assumed a markedly militaristic character in order to further a cause which it had at heart—namely, the greater good of our country. Many of your readers, while profoundly disagreeing with the particular views in question, nevertheless respected those views and continued as fascinated readers of the paper.

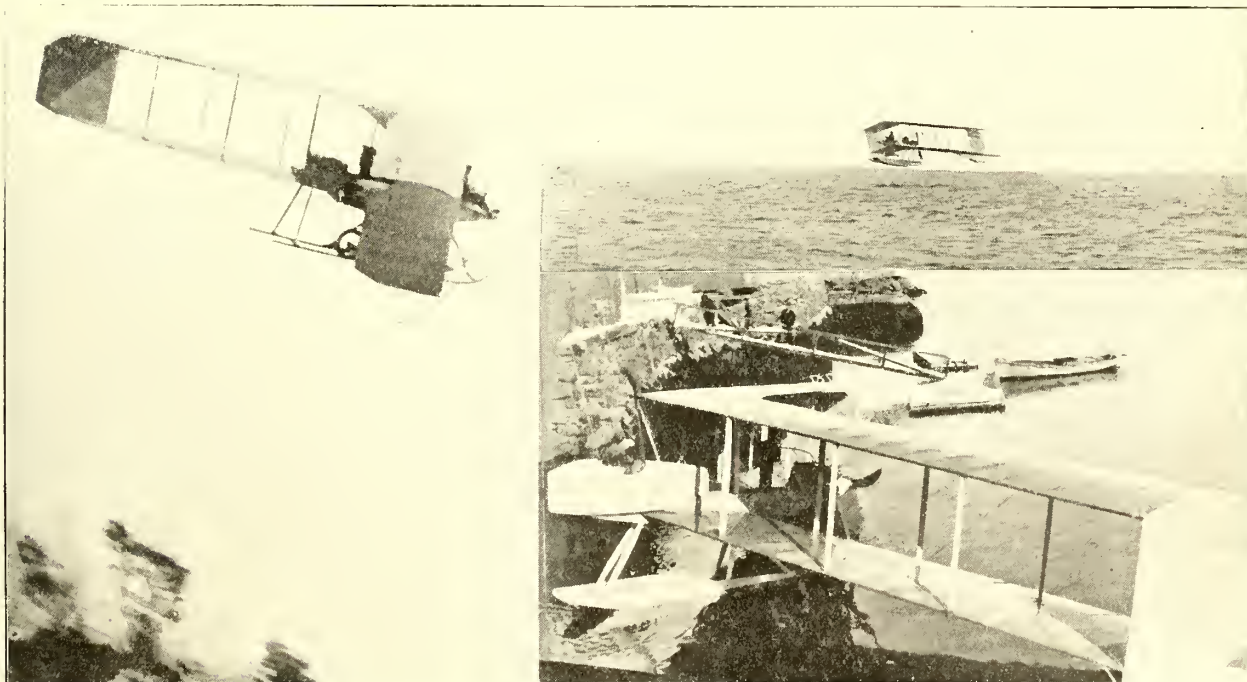
"On opening your current issue, however, I find in your leading article that views are expressed which cannot, by the wildest exercise of imagination, be thought to have the remotest connection with the science and practice of aeronautics. This statement is not a prelude to the assertion that I for one shall read *THE AEROPLANE* no longer. Such a decision would hardly shake the foundations of your offices, and, further—I prize the paper far too highly to deny myself the weekly pleasure it affords.

"I do not intend to answer in detail—or even generally—the points raised in your article, for I am convinced that neither for assertions nor refutations of this kind is there rightly any place in your columns. I am perfectly aware that you, sir, would wish to see both sides of any question, however vital it might be, but I refrain from putting forward my own point of view simply because—however willing you might be even to publish the heated pacifist correspondence in the paper—you are not asked to print such matter.

"For myself, I should resent the intrusion of pacifist opinions into a purely technical paper quite as much as I resent the extraordinary paragraphs with which the present issue commences. This country is still nominally willing to hear both sides, but for reasons already expressed I refrain from giving my own point of view, and must venture to ask at least that you would clothe your views in a less pugnacious form, and so continue to retain the sympathies of all types of mind for your excellent work in the cause of aeronautics."

[It is to be feared that this courteous and pacific writer has missed the precise point of the article, which set out to show that we must prepare for immense expansion in the flying Services when the present war is over, and must have no non-sense about disarmament or lightening the burden of militarism. In order to prove that point it was necessary to show that treaties and alliances are temporary arrangements, the outcome of national expediency, and that man is as pugnacious an animal to-day as ever he was. Future preparation for war will have more to do with aeronautics than anything else.

The views of our pacifist reader on this point would be highly esteemed. Perhaps he will explain how the educating of several millions of high-spirited young men to the trade of manslaughter is going to make for peace in the next generation. One quickly becomes accustomed to the death of human beings, which is one reason why our aviators at the start took the whole business of war more casually than did any other soldiers. When one has dug the mangled corpses of a few of one's best friends out of wrecked aeroplanes in time of peace one becomes a trifle callous about people one does not know who are killed in war, and perhaps, after all, one acquires a better perspective of the intrinsic value of human life—except one's own, of course.—Ed.]



Three views of the Burgess-Dunne Biplane, built by the Burgess-Curtis Co. (no relation of Mr. Glenn Curtiss) of Marblehead, U.S.A., to the patents of Mr. J. W. Dunne. In the right-hand pictures it may be seen that the curious dip (known in America as the "bustle") in the angle of the planes has disappeared.



## Aero-motors: In Kind and Construction.—(Continued)

BY GEOFFREY DE HOLDEN-STONE.

Despite all that has been said hitherto, one has not wholly arrived at any final reason for the evidently inherent lack of flexibility of the rotary type of motor. On paper—and, one would imagine, in practice—the mere process of petrol-starvation should go a long way to overcoming this defect. Certainly if pilots would be persuaded to study the peculiarities of their motors further than merely listening for even running and firing; if they would only experiment more, especially in the way of seeing how long they could remain aloft with the smallest allowance of petrol—they would not only give their motors a better all-round chance of doing their best work, but they would, for one thing, find them climbing 20 per cent. better than is often the case. Incidentally, they might well attain a greater average degree of flexibility.

Still, there is one factor militating against that result; first, last, and all the time. And that one being the most subtle in the entire range of physics, the one that must always be looked for at every turn, as the basic question of any applied-power problem, the finally satisfactory explanation or conclusion may well escape. For that factor is none other than—inertia. Its eternal presence in any prime mover, especially one with stationary cylinders, actually assists flexibility, so long as the flywheel is correctly designed, *en rapport* with the reciprocating parts, so that the kinetic energy of the former shall always be that little stronger than the inertia of the latter, as to keep the motor running truly and evenly at all speeds.

Here, let it be understood, is no law; nothing from which any exact formulæ can be derived. It is, indeed, only a fairly constant observation of practice, one of those *secrets de fabrication* which every motor-maker must work out for himself quite empirically from trial and error; and that has been, as a matter of fact, so generally worked out, as to constitute the chief factor in the smooth running flexibility of latter-day motors.

### Inertia Effect.

But the moment we come to any rotary proposition all this, so to say, friendly effect of inertia is lost; for the greater part of it, as represented by the weight of the pistons and connecting rods, is forthwith turned into kinetic energy, additional to that of the rotating cylinders. In short, all that helps the motor to be purely an energised flywheel, renders it a less controllable one. You may start it readily, work it up to full speed in a few seconds; but starve it, throttle it as you may, you will not bridle its speed appreciably so long as it is firing at all, for many a minute, until again its own inertia as a flywheel comes to your aid, and helps you gradually to get it in hand.

In the face of these facts, then, one would ask whether any great flexibility is possible, in this type of motor, even in such a refined example as the Gnome monosoupape, in the hands of the average pilot. It does not, then, seem fair to expect it. And in this connection, while saying nothing against its obvious efficiency for final instalment, one doubts, in the circumstances, the probability of getting any very accurate tests as to the all-round efficiency of an experimental aeroplane fitted with a rotary; especially in the highly important matter of speed range, to say nothing of actual lifting power at the lowest speed apparently attainable. In other words, the flying efficiency of the aeroplane under test, as these two points seem hardly determinable in the case of a machine only partially or intermittently under power; drifting rather than flying, and in constant danger of stalling on these accounts.

### Gnome Construction.

Turning now to the detail construction of the Gnome motors, description may be shortened by saying that the size and number of cylinders represent practically the only differences between any of the nine models; Omega, the original 50 h.p., 110 mm. by 120 mm.; Sigma, 60 h.p., 120 mm. by 120 mm.; Lambda, 80 h.p., 124 mm. by 140 mm.; Delta, 100 h.p., 124 mm. by 150 mm., which last has nine cylinders instead of the regular seven; their four doubles; and the odd Eta type. All these, as well as the monosoupapes of

80 and 100 h.p.—seven and nine cylinders respectively, 110 mm. by 150 mm.—date, so to say, from the fixed crank-shaft round which they move; the motor-mass on the journal-axis, and the reciprocating parts on that of the crank. The crank-shaft carries everything: and is itself attached to the mounting-frame by bolts through a plate—the equivalent of a flywheel web—set upon it in a taper fit, jammed tight by a lock nut, in the usual way.

### End Thrust?

Now this may or may not be the sole point of support for the entire motor. That depends on the scheme of mounting it. From an engineering standpoint it would almost go without saying that the stress of rotation should be borne forward as well as aft, especially since the hollow beak-shaft carrying the propeller is attached by its web-plate to the forward plate of the crank chamber, even in front of the free end of the crank-shaft. What, then, should be said of certain "pusher" biplane installations wherein the propeller is actually interposed between the shaft-attachment and the motor-mass, thus extending the weight of the latter still further beyond the point of anchorage?

### Double Support.

However, in all tractor installations of even the seven-cylindred models, and invariably for those of fourteen, the beak-shaft rotates in a ball-bearing in the front plate of the mounting frame.

Here, too, it is not unhelpful to the just appreciation of the Gnome to state that it is not a "lightened" or in any way stripped motor, but one built as well as designed for lightness, combined with the greatest strength. Consequently there is not a casting anywhere in it, nor a scrap of aluminium, everything, practically, being hand-forged from nickel steel in the first place and then machined out of the solid.

To resume, the aforesaid web-plate not only carries the magneto and the positive or main-conductor plug therefrom, but also the oil pump, as well as the mountings of the planetary gears of both, which are rotated by the sun-wheel mounted on a rearward extension of the crank chamber concentrically to the distributor-plate, to which the naked ignition wires are attached.

Here, too, we note that it is within this extension that the main double ball-bearing is housed upon which the entire motor mass rotates.

### The "Innards."

Further features common to all Gnome models are, first, that the shaft—of great diameter at this end—is drilled hollow, so as to serve (a) as an induction trunk into the crank-chamber, and (b) as a conduit for the lubrication pipes to the main thrust bearing, and in and through the stationary crank-pin; for the lubrication, not only of the "master grip" to which all the connecting rods are attached, but also the cam-sleeve and planetary valve gearing—4 to 7—on the other, or "free" end of the shaft.

Secondly, as to this gearing. Mounted solid on the shaft (between the outer thrust bearing and the gear wheel set on the freely mounted cam-sleeve), is a sun-wheel meshing with the larger of two planet gears (mounted freely within the front plate of the crank-chamber) the smaller of which meshes in turn with the cam-sleeve gear. Thus the rotation of the motor sets the planets rotating round the fixed sun-wheel, and their rotation revolves the free-gear wheel and its cam-sleeve on the shaft in the opposite direction. The seven, or nine, or fourteen, cams thus alternately lift—through hardened steel rollers—the jointed tappet rods attached hinged-wise to the exhaust-valve rockers, the leaf-springs on these last serving the double purpose of holding the valves closed, yet out of actual contact with the rockers, and keeping the tappet rollers down on their cams.

### Monosoupape Control.

Hitherto, in the monosoupape models, all the actuating members of this valve-gear were enclosed in a drum, slotted to let the tappets through, and having an internally-toothed gear formed on its web, meshing with a second gear-wheel on

the inner end of the cam-sleeve. Thus when the drum was rocked by rotation of two short inter-connected crank-spindles back and front—the one attached crankwise to the drum and the other to a crank-pin in a sliding collar on the main shaft, controlled by a rod within it—a certain lag or advance in the valve-lift was duly effected. Naturally, the mechanism worked as intended. But the idea of governing the motor speed by varying the moment of the valve-lift, more or less after the early Daimler and later Lahaussais systems—and thus obtaining greater flexibility, does not appear to have succeeded in flying practice so generally as was expected; so it remains to be seen whether this interesting device will be retained or not.

#### The "Big End" Arrangement.

The third feature of Gnome construction is the design of the *maitresse-bielle*, or "master grip," formed on the main connecting rod. This consists essentially of a drum with its sides or webs sunk inwardly—so that its periphery may completely enclose ball-bearings on either side—and having a large circular opening in the centre of these webs to take the male and female halves of the crank, the collar or bush surrounding both centrally, and the hollow central bolt locking all together. Appropriately spaced round this large central opening in the webs are six smaller ones, which take the wrist pins of the other six connecting rods, which last are inserted through oval slots in the periphery of the drum.

#### How It Goes Together.

The first operation, however, in the assembly of a Gnome motor is the attachment of the pistons, which constitutes the fourth special feature of Gnome design in all except the monosoupape model. Actually, the piston head is gripped between a ring-like body with two hanging lugs, and the dome-like box or seating of the a.o. valve, which is threaded on and set hard down into the ring-like body. Before doing this, the connecting-rod head—held in a special tubular device with cross bars to prevent it turning—is set into the lugs and attached by its hollow gudgeon pin, which is secured by inserting a copper tube carrying large washers threaded on its ends and butting against the lugs. Then the piston is set on, but before screwing in the valve seating one interposes a flat copper packing ring cut with two lapping extensions that fit between any two pairs of the castellations surrounding the open centre of the piston-head. When, however, the valve seating has been screwed hard down on the copper joint and into the aforesaid ring of the connecting rod attachment, so that the piston is finally secured, the edges of the copper joint are turned up in other lapping

pieces, which are lightly tapped into place between other castellations on the valve-dome, which is thus effectively prevented from working loose, and yet may be readily set free.

This done, the pistons are inserted into the cylinders—the one belonging to the master-grip first—and the assembly of the latter is proceeded with. The master-grip will now be on its side; so the right-hand ball-bearing—now undermost—is slipped into its place in the underside of the drum, its inner race serving as a base or locking-piece for the six wrist pins—which are drilled hollow and pierced transversely to act as oil-leads—that are next dropped in—after inserting the connecting rods one by one—to attach the said rods. Next, the central collar is inserted in the large central opening of the drum; and the subsequent setting in place of the left-hand—now uppermost—ball-bearing, completely encloses the connecting-rod wrist-pins. Then the male member of the crank is inserted from beneath upwards through the lower ball-bearing; and the insertion of the female member downwards through the upper one, and over the taper end of the male member, and the final insertion of the locking-bolt through both, completes the assembly of the master-grip as soon as the nut is set home on the bolt.

#### Minor Details.

Subsequently the assembly of the motor is completed by setting all other parts in place, back and front as directed; the afterparts, such as the main-thrust bearing, magneto, etc., first, and then, reversing the motor bodily, the distributing gear, etc., etc., setting in the exhaust valves last of all.

Having illustrated as much by detailing the special assembly of the various parts of the Gnome motor, as by describing the parts themselves, the relation of all to one another, and hence, probably, the clearest idea of their working, and the whys and wherefores of an unique type, it is sufficient to conclude by saying that the pump is a cam-and-spring operated two-cylindered affair giving the most positive and reliable delivery, first to two sight feeds, and then into the motor itself; that the ignition distributor consists of a simple ebonite plate, with seven copper segments making and breaking and picking up the current by light rubbing as they rotate past the magneto plug; and that the carburettor is of the simplest floatless mixing-valve type with the usual air-setting sleeve and butterfly throttle.

So much then, as matters for the mechanical and physical aspects of the Gnome; leaving the question of its upkeep and maintenance for further discussion.

*To be Continued.*

### Ornithological Observations.

A clever engineer of much experience in aviation writes:—

"Will you allow me to put before you my own experience of the power of parrots in detecting aircraft?"

"In the years 1909-1910 I was staying near Paris, where we had a common green Brazilian parrot. Hundreds of times that parrot helped us to discover flying-machines which were only mere specks in the sky. At a time when flying-machines were a novelty my people used to rush to the window on hearing the bird screech plaintively, which heralded the approach of a flying-machine, airship, balloon, bird of prey, or a pigeon. The bird effectively bristled its feathers and looked fixedly on the machine, following it in its flight, and ceasing to screech only when the machine went out of sight.

"I personally never saw the bird detecting aircraft when inside a room, but there is no question that the bird sees farther than the human eye, and immediately gives its warning. There is, after all, nothing supernatural or even extraordinary attached to it as it is the faculty of many birds to detect the coming of a bird of prey and to give warning to their mates by means of a special cry. On the approach of any bird about the size of a crow or of a pigeon our hack-yard cock will warn its hens and fixedly follow the coming danger.

"I may add that the parrot is now in the very heart of Paris, and still on the watch for flying-machines, but it has never showed any faculty of distinguishing between the noise of an aeroplane engine and the noise of the thousands of taxicab engines that are passing before him; therefore the story of the parrot who detects the coming machine through the

hearing of the humming of the engine seems to me to deserve your allusion to the mice who hear the hum of the coming, destroyer turbines.

"There is, however, a serious side to the question, and the day may come when that special faculty will be used, after having been made the subject of many a joke."

#### A Prehistoric Aviator.

The following inscription, which is on one of the walls of St. Mary's Church, Shrewsbury, is sent by a reader at Farnborough, and deserves to be put on record:—

"Let this small monument record the name  
Of Cadman and to future times proclaim  
How by an attempt to fly from this high spire  
Across this Sabrina stream he did acquire  
His fatal end. It was not from want of skill  
Or courage to perform the task he fell.  
No! no! a faulty cord being drawn too tight  
Hurried his soul on high to take her flight  
Which bid the Body here Good Night."

#### A Vacancy.

Owing to yet another member of the staff joining his Majesty's Forces, there is a vacancy in the office of this paper for a junior clerk. Applications must be, by letter only, to this office. Applicants must either be maimed, halt, or blind, or below military age. A knowledge of shorthand and type-writing is essential, as also is decent handwriting and a moderate acquaintance with the King's English as spoken in respectable society. The position offers distinct possibilities to a good-class youth who is interested in aircraft.



**New Pilots.**

The following certificates have been issued by the Committee of the Royal Aero Club since the last list published in this paper:—

1003, Flight Sub-Lieut. George Fred Breese, R.N.A.S. (Grahame-White biplane, Grahame-White School, Hendon), Dec. 19th, 1914; 1004, Flight Sub-Lieut. Gerald Edward Livock, R.N.A.S. (G.-W. biplane, G.-W. School, Hendon), Dec. 20th, 1914; 1005, Flight Sub-Lieut. Douglas Meston Barnes, R.N.A.S. (G.-W. biplane, G.-W. School, Hendon), Dec. 20th, 1914; 1006, Geoffrey Harold Brinkman McCall (M. Farman, Military School, Brooklands), Dec. 20th, 1914; 1007, Gino Virgilio (Wright biplane, Beatty School, Hendon), Dec. 20th, 1914; 1008, Ernest Alfred Edward Wood (M. Farman, Military School, Brooklands), Dec. 21st, 1914; 1009, Flight Sub-Lieut. Walter Shackfield Newton-Clare, R.N.A.S. (Short biplane, R.N. Flying School, Eastchurch), Dec. 20th, 1914; 1010, Flight Sub-Lieut. Thomas Kenneth Young, R.N.A.S. (G.-W. biplane, G.-W. School, Hendon), Dec. 21st, 1914.

1011, Melville Richard Allen (M. Farman, Military School, Brooklands), Dec. 22nd, 1914; 1012, Leo Francis Page (M. Farman, Military School, Brooklands), Dec. 22nd, 1914; 1013, Lieut. King Davie Harris (K.O. Scottish Borderers) (M. Farman, Netheravon Flying School), Dec. 22nd, 1914; 1014, Flight Sub-Lieut. Harold James Batchelor, R.N.A.S. (Short biplane, R.N. Flying School, Eastchurch), Dec. 22nd, 1914; 1015, Ralph Christopher Freeman (M. Farman, Military School, Brooklands), Dec. 22nd, 1914; 1016, Lionel Macdonald Wells Bladen (M. Farman, Military School, Brooklands), Dec. 22nd, 1914; 1017, Flight Sub-Lieut. William Laurie Welsh, R.N.A.S. (Short biplane, R.N. Flying School, Eastchurch), Dec. 22nd, 1914; 1018, Thomas Vaughan Lister (Bristol biplane, R.N. Aviation School, Hendon), Dec. 23rd, 1914; 1019, Flight Sub-Lieut. Arthur Quilton Cooper, R.N.A.S. (Bristol biplane, R.N. Flying School, Hendon), Dec. 23rd, 1914; 1020, Flight Sub-Lieut. Charles Beauvoir Dalison, R.N.A.S. (G.-W. biplane, G.-W. School, Hendon), Dec. 24th, 1914.

1021, 2nd Lieut. Percy Gilbert Ross-Hume (M. Farman, Netheravon Flying School), Dec. 24th, 1914; 1022, Herbert Prinsep Somers Clogstoun (M. Farman, Military School, Brooklands), Dec. 24th, 1914; 1023, Robert Hobart Mayo (M. Farman, Military School, Brooklands), Dec. 24th, 1914; 1024, Lieut. Richard Williams, Jun. (Commonwealth Military Forces) (Bristol biplane, Central Flying School, Werribee, Australia), Nov. 12th, 1914; 1025, Capt. Thomas Walter White (Commonwealth Military Forces) (Bristol, C.F.S., Werribee), Nov. 14th, 1914; 1026, Lieut. George Pinnock Merz, M.B., B.S. (Bristol, C.F.S., Werribee), Nov. 14th, 1914; 1027, 2nd Lieut. David Thomas William Manwell (Bristol, C.F.S., Werribee), Nov. 16th, 1914; 1028, John Whitaker Woodhouse (Farman type biplane, Pashley Bros., and Hale, Shoreham), Dec. 22nd, 1914; 1029, Clarence Arthur Charles Winchester (Farman type biplane, Pashley Bros., and Hale, Shoreham), Dec. 22nd, 1914; 1030, Lieut. Arthur Leslie Donaldson (Rifle Brigade) (M. Farman, Netheravon Flying School, Dec. 26th, 1914).

1031, Lieut. William Bowen Hargrave (Suffolk Regiment) (M. Farman biplane, Central Flying School, Upavon), Dec. 31st, 1914; 1032, 2nd Lieut. Ewart Douglas Horsfall (Rifle Brigade) (M. Farman, C.F.S., Upavon), Dec. 31st, 1914; 1033, Lieut. Chisholm Wilfred Anstey, S.W.B. (M. Farman, C.F.S., Upavon), Jan. 2nd, 1915; 1034, Lieut. Dawson Calybut Downing, R.N. (M. Farman, C.F.S., Upavon), Jan. 6th, 1915 (since deceased); 1035, 2nd Lieut. Basil Henry Ryder, R.F.A. (M. Farman, Netheravon Flying School), Jan. 6th, 1915; 1036, Capt. Philip Babington (9th Hants Regiment) (M. Farman, Netheravon Flying School), Jan. 7th, 1915; 1037, Flight Sub-Lieut. James Conrad Peter Wood, R.N.A.S. (Bristol biplane, R.N. Air Station, Hendon), Jan. 10th, 1915; 1038, 2nd Lieut. Crathorne Edward Isham Chalton Anne (K.O.Y.L.I.) (M. Farman, C.F.S., Upavon), Jan. 12th, 1915; 1039, William Arthur Grattan Bellew (M. Farman, Military School, Brooklands), Jan. 17th, 1915; 1040, Vyvyan Arthur Hemming Robeson (M. Farman, Military School, Brooklands), Jan. 18th, 1915.

1041, Lieut. Myles Teignmouth Sandys, R.G.A. (M. Farman biplane, Netheravon Flying School), Dec. 25th, 1914; 1042,

2nd Lieut. Harold William Medicott, R.F.A. (M. Farman, Military School, Brooklands), Jan. 18th, 1915; 1043, Ernest Edwards Hodgson (M. Farman, Military School, Brooklands), Jan. 19th, 1915; 1044, Louis William Yule (M. Farman, Military School, Brooklands), Jan. 21st, 1915; 1045, Flight Sub-Lieut. Frank Besson, R.N.A.S. (G.-W. biplane, G.-W. School, Hendon), Jan. 23rd, 1915; 1046, 2nd Lieut. Seldon Herbert Long (Durham Light Infantry) (M. Farman, Military School, Brooklands), Jan. 25th, 1915; 1047, Ernest Greenwood (G.-W. biplane, G.-W. School, Hendon), Jan. 26th, 1915; 1048, Lieut. Edgar Bannatyne (19th Hussars) (Wright biplane, Beatty School, Hendon), Jan. 26th, 1915; 1049, Flight Sub-Lieut. John Stanley Mills, R.N.A.S. (G.-W. biplane, G.-W. School, Hendon), Jan. 26th, 1915; 1050, John Lloyd Williams (Hall Caudron-type biplane, Hall School, Hendon), Jan. 26th, 1915.

1051, Flight Sub-Lieut. Terence Felix Driscoll, R.N.A.S. (G.-W. biplane, G.-W. School, Hendon), Jan. 26th, 1915; 1052, Sergt. Hugh McKenna, R.F.C. (M. Farman, R.F.C., Netheravon), Jan. 17th, 1915; 1053, Flight Sub-Lieut. Frederick Joseph Rutland, R.N. (Short biplane, R.N. Flying School, Eastchurch), Jan. 26th, 1915; 1054, Charles Drury Fuller (M. Farman, Military School, Brooklands), Jan. 28th, 1915; 1055, Edward Ernest Clarke (M. Farman, Military School, Brooklands), Jan. 28th, 1915; 1056, 2nd Lieut. John Ronald McCrindle (7th Gordon Highlanders) (M. Farman, C.F.S., Upavon), Jan. 28th, 1915; 1057, Clive F. Collett (L. and P. biplane, London and Provincial School, Hendon), Jan. 29th, 1915; 1058, Jack Oliver Cooper (M. Farman, Military School, Brooklands), Jan. 29th, 1915; 1059, Gerald Merton (Wright biplane, Beatty School, Hendon), Jan. 29th, 1915; 1060, Flight Sub-Lieut. John Daniel Newberry, R.N.A.S. (Wright biplane, Beatty School, Hendon), Jan. 30th, 1915.

1061, Flight Sub-Lieut. Graham Donald, R.N.A.S. (Wright biplane, Beatty School, Hendon), Jan. 30th, 1915; 1062, 2nd Lieut. Maximilian Knight Cooper-King (7th Batt. York and Lancaster Regt.) (M. Farman, Military School, Brooklands), Feb. 1st, 1915; 1063, Harold MacDonnell O'Malley (M. Farman, Military School, Brooklands), Feb. 1st, 1915; 1064, Lieut. Jacob Guy Swart, R.H. and R.F.A. (M. Farman, R.F.C., Shoreham), Jan. 25th, 1915; 1065, Flight Sub-Lieut. Edward Thomas Anstey Chave, R.N.A.S. (Wright biplane, Beatty School, Hendon), Jan. 26th, 1915; 1066, Flight Sub-Lieut. Stephen Medicott, R.N.A.S. (M. Farman, C.F.S., Upavon), Jan. 28th, 1915; 1067, Flight Sub-Lieut. Oswald Noel Walmesley, R.N.A.S. (G.-W. biplane, G.-W. School, Hendon), Jan. 29th, 1915; 1068, Flight Sub-Lieut. Cyril Napier Leeston-Smith, R.N.A.S. (Wright biplane, Beatty School, Hendon), Feb. 1st, 1915; 1069, Flight Sub-Lieut. Frank Thomas Digby, R.N.A.S. (G.-W. biplane, G.-W. School, Hendon), Feb. 1st, 1915; 1070, Capt. Frank Walker Smith (M. Farman, Royal Flying Corps, Shoreham), Feb. 1st, 1915.

1071, Flight Sergt. Michael Keegan, R.F.C. (Avro biplane, Royal Flying Corps, Netheravon), Jan. 29th, 1915; 1072, Flight Sub-Lieut. Bertram Denison Kilner, R.N.A.S. (Short pusher biplane, R.N. Flying School, Eastchurch), Feb. 1st, 1915; 1073, Viscount Exmouth (M. Farman, R.F.C., Shoreham), Jan. 25th, 1915; 1074, Flight Sub-Lieut. Richard Cecil Petter, R.N.A.S. (G.-W. biplane, G.-W. School, Hendon), Feb. 11th, 1915; 1075, Flight Sub-Lieut. Eustace de Courcy Hallifax, R.N.A.S. (G.-W. biplane, G.-W. School, Hendon), Feb. 11th, 1915; 1076 (hydro-aeroplane), Ralph Oliver Lashmar (N.A.C. seaplane, N.A.C. School, Lake Windermere), Feb. 11th, 1915; 1077, Flight Sub-Lieut. James Edward Baker Bere Maclean, R.N.A.S. (Bristol, R.N. Air Station, Hendon), Feb. 12th, 1915; 1078, Flight Sub-Lieut. Harris Holberton Square, R.N.A.S. (Bristol, R.N. Air Station, Hendon), Feb. 12th, 1915; 1079, Flight Sub-Lieut. Gerald William Hilliard, R.N.A.S. (G.-W. biplane, G.-W. School, Hendon), Feb. 12th, 1915; 1080, Walter Laidler (L. and P. biplane, London and Provincial School, Hendon), Feb. 12th, 1915.

1081, Flight Sub-Lieut. Christopher Eric Wood, R.N.A.S. (G.-W. biplane, G.-W. School, Hendon), Feb. 12th, 1915; 1082, Charles Walter Graham (G.W. biplane, Hendon), Feb. 12th, 1915; 1083, Hazelton Robson Nicholl (M. Farman, Military School, Brooklands), Feb. 16th, 1915; 1084, George William Bransby Williams (L. and P. biplane, London and Provincial School, Hendon), Feb. 16th, 1915; 1085, Richard Burnard

Munday (M. Farman, Military School, Brooklands), Feb. 16th, 1915; 1086, Lieut. Nicolas Alexander Meletopoulos, R.N. (Greece) (Sopwith hydro-biplane, Royal Hellenic Naval Air Station, Eleusis, Greece), Sept. 22nd, 1914; 1087, Lieut. Aristides Moraitinis, R.N. (Greece) (Sopwith hydro-biplane, Royal Hellenic Naval Air Station, Eleusis, Greece), Sept. 22nd, 1914; 1088, Lieut. Constantin Panagiotou, R.N. (Greece) (Sopwith hydro-biplane, Royal Hellenic Naval Air Station, Eleusis, Greece), Sept. 29th, 1914; 1089, Flight Sub-Lieut. Ralph Squire Sorley, R.N.A.S. (Short biplane, R.N. Flying School, Eastchurch), Feb. 12th, 1915; 1090, Flight Sub-Lieut. Robert Souray, R.N.A.S. (G.-W. biplane, R.N. Air Station, Hendon), Feb. 16th, 1915.

1091, Flight Sub-Lieut. Robert Hudson Routledge, R.N.A.S. (Bristol, R.N. Air Station, Hendon), Feb. 16th, 1915; 1092, Jack Noakes (L. and P. biplane, London and Provincial School, Hendon), Feb. 20th, 1915; 1093, Arthur Richard Howe Browne (M. Farman, Military School, Brooklands), Feb. 20th, 1915; 1094, Robert Edward Aylmer Werge Hughes-Chamberlain (M. Farman, Military School, Brooklands), Feb. 20th, 1915; 1095, Flight Sub-Lieut. George Henry Beard, R.N.A.S. (Wright biplane, Beatty School, Hendon), Feb. 20th, 1915; 1096, William Evan Collison (M. Farman, Military School, Brooklands), Feb. 22nd, 1915; 1097, Stanley Winther Caws (M. Farman, Military School, Brooklands), Feb. 25th, 1915; 1098, Flight Sub-Lieut. Reginald Alexander John Warneford, R.N.A.S. (Bristol, R.N. Air Station, Hendon), Feb. 25th, 1915; 1099, 2nd Lieut. Hugh Vivian Champion de Crespigny (M. Farman, Military School, Brooklands), Feb. 26th, 1915; 1100, 2nd Lieut. Marwood Elton Lane, R.F.C. (M. Farman, Military School, Brooklands), March 2nd, 1915.

1101, Oliver Dwight Filley (M. Farman, Military School, Brooklands), March 2nd, 1915; 1102, John Halstead Moore (L. and P. biplane, London and Provincial Aviation School, Hendon), March 4th, 1915.

### Another!

Of the making of premature books on the war there is no end. The latest production is a volume entitled "Aircraft in the Great War," to which are attached the names of Mr. Claude Grahame-White, now a Flight Commander, R.N.A.S., and Mr. Harry Harper, a partnership which has already produced a number of volumes dealing with aircraft.

Provided that one does not take this book too seriously and is not over-nice in one's taste as to literary quality, and provided that one has not followed the doings of aircraft in the war particularly closely, one may be quite entertained by the numerous anecdotes which have been collated within its covers from various sources, but it must not be taken as a serious contribution to the Naval or Military problems connected with aircraft.

It is, one gathers, a trifle unusual for an officer on the Active List to have his name attached to a book ostensibly concerning Service matters, during the progress of a war in which he is concerned, and one is inclined to wonder how, amid the strenuous duties of war time, an officer could find time for literary interests, unless officially detailed in charge of records. One can, however, acquit Mr. Grahame-White of having given away anything affecting Service matters, or even of hazarding any theories affecting aircraft which might be of Naval or Military value, for everything which appears in the book is already well known to all who are at all closely interested in aeronautical matters.

Sundry rather obvious inaccuracies occur in the text, and there is a tendency to state as facts incidents which are merely based on rumour or newsagency reports, as, for instance, the statement that "Half a dozen Zeppelins had, during the operations up to mid-December, been brought down by the Allies' guns." It is known definitely that one Zeppelin was brought down by French artillery, but there is no authentic record that any others have been so destroyed.

Also, the circumstances connected with M. Verrier being wounded are narrated as occurring to M. Paulhan. Readers of this paper, however, will have read last week that M. Paulhan only passed for his Superior Brevêt a week or two ago.

The book also has a tendency to underrate the efficacy of airships in general and big airships in particular, which per-

haps is only to be expected considering how the authorities have refrained from making known the good work done by the French and British airships, so that no details are available from the press.

The writer of the book has courteously acknowledged many of his anecdotes as being derived from this paper, and consequently one is duly recognisant.

### A Defensive Aeroplane.

The curious little Nieuport biplane which is illustrated in this issue is an example of old ideas being put into practice for purposes other than that for which they were originally intended. Those who have been connected with aviation for the last few years will remember the MacFie biplane which was built at Brooklands, which was arranged so that the pilot's head should project through the top plane. The machine never flew, but it undoubtedly had possibilities, and was, in fact, the embryo of the modern "tabloid" scouts.

At a later date it was suggested at various times in this paper that biplanes might well be built with a streamline turret, the top of which would be level with the upper plane, through which the passenger could use firearms; and a hypothetical machine of this nature was illustrated in THE AEROPLANE some time ago. The Nieuport firm has evidently hit on the same idea, and has actually put it into execution.

Apart from the position of the passenger, the machine offers no particularly new aerodynamic features, but it will be noticed that, though it appears to be a biplane, it is in reality a parasol monoplane with a small plane of very much reduced chord fixed underneath, so as to make a girder structure of the whole thing. In this respect it seems to trace its ancestry to the big Deperdussin seaplane built a couple of years ago by the Deperdussin Co., and shown at Olympia, only in the case of the Deperdussin the lower spar of the girder was merely streamlined, and was not actually made into a self-lifting plane as in the little Nieuport.

Good accounts are given of the machine's actual performances, but one imagines that in an aeroplane of such small size the pilot would have plenty to do in controlling its longitudinal path as the passenger sat down or stood up.

The machine would certainly be an awkward proposition for any hostile aviator to tackle who intended to adopt the usual plan of rising above it and firing down.

### Airships and Armament.

The "Scientific American" of March 6th says: "Airships equipped with machine-guns run a certain degree of risk from an explosion caused by the flame at the muzzle of the gun. Hence considerable study has been devoted to obviating this danger. This has now been accomplished by a young Florentine chemist named Guido Fel, according to the 'Deutsche Waffenzzeitung.' He is said to have recently given a demonstration before an Italian military commission of a new powder invented by him which burns without either flame or smoke and does not flare up on detonation. Its ballistic properties are said to be excellent. While specially useful for the guns of aircraft, it will be of value in artillery and infantry engagements from the fact that it will not betray the firing-line."

[Recent experiments in various countries of late have shown that for some obscure reason it seems impossible to ignite hydrogen with the flame of a rifle or machine-gun using ordinary ammunition, so apparently small-arms may be used on top of airships with impunity.—Ed.]

### A New Constructional Firm.

The Mayrow Steel Construction Co. have secured commodious new premises at Lilly Road, Fulham, not very far from Earl's Court. The building comprises five floors, each having a floor space of 90 ft. by 45 ft., giving a total floor area of 20,250 sq. ft. The place is being fitted with the most up-to-date machinery, and the firm will be in a position to undertake any class of work for the aeroplane industry, and to judge by the excellent system which is to be found in each department they ought to be able to deal with work entrusted to them with precision and dispatch.

The firm have designed an all-metal biplane which weighs 990 lbs. empty. At present they are very busy on B.E. parts, etc., but their capacity will be about trebled when they get into the new premises at the beginning of April.



**The Latest in Dopes.**

A DOPE FREE OF TETRACHLORETHANE AND OTHER HEAVY AND POISONOUS SPIRITS.

There can be few people who have anything to do with the shipbuilding industry to whom the name of Holzapfel is not one of the most familiar in the English language, for the anti-fouling and anti-corrosive compositions manufactured by the firm, which started in a small building at North Shields some thirty-three years ago, are in use practically wherever the British mercantile marine operates. As a matter of fact, these compositions are also commonly in use in the Royal Navy, and are probably of very considerable value at the present moment, when a knot or two of extra speed depending on the state of a ship's bottom may decide an important naval action. The firm has been on the British Admiralty list of contractors for many years, and large orders for compositions for the coating of his Majesty's ships have been received since the war broke out.

Originally the anti-fouling composition was made under a British patent, and, though that patent has since expired, the firm's experience in this particular product has enabled it more than to maintain its lead in this particular section of chemical science, with the result that branch establishments now exist at London, Liverpool, Glasgow, Cardiff, New York, Genoa, Copenhagen, and Sebastopol.

The firm of Holzapfels, Ltd. (head office, Milburn House, Newcastle-on-Tyne), has an authorised capital of £500,000, of which £450,000 is paid up; and the directors of the company are British subjects, as are all managers of departments, and of the clerical staff of about 160 members all but 7 are British, and these exceptions have been selected for their knowledge of languages, which is essential to the foreign trade.

From the original small works at North Shields devoted to the production of anti-fouling composition, the establishment has expanded till it occupies an area of about 15 acres at Felling-on-Tyne, where a highly modernised plant has been organised which produces paints, enamels, varnishes, paint-removers, and other specialities of kindred natures, besides manufacturing a considerable quantity of the necessary raw

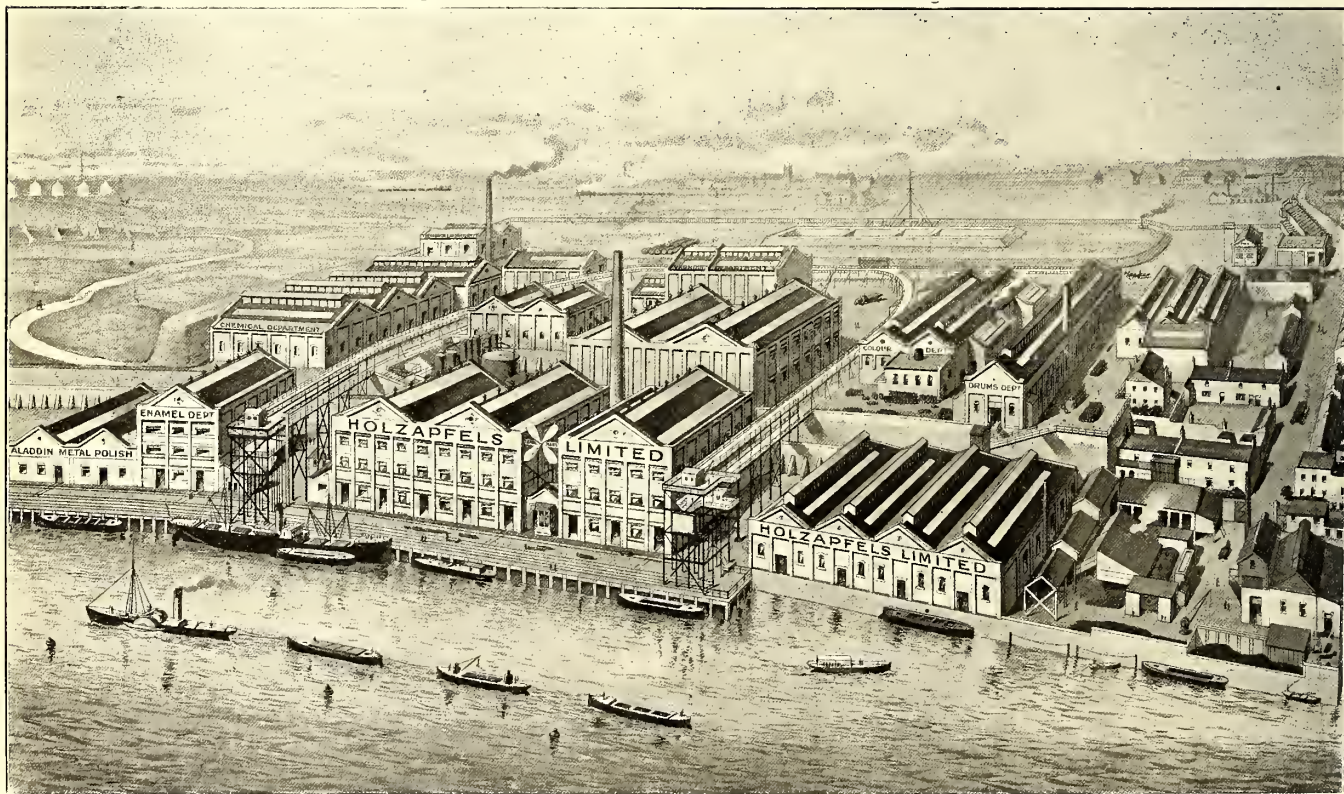
materials. Some six highly trained chemists are employed at the Felling works.

Bearing this in mind, it is only natural that with the enormous growth of the aircraft industry the firm should turn its attention and the ability of its expert chemists to the production of varnish for aircraft. The result is a new dope known as "Titanine," which, it is claimed, is free from tetrachlorethane, carbon tetrachloride, and all other spirit derivatives of chlorine, and other heavy and poisonous spirits. In fact, the firm claims to be the first to have made a satisfactory aeroplane dope without using these spirits. Several recent deaths that have occurred in aircraft factories and have been attributed to the use of tetrachlorethane in dope suggest that "Titanine" should prove a boon to both the workers and the aircraft constructors.

The vapour given off by "Titanine" is little more than half the weight of that given off by the old style of dope, and the manufacturers claim that the ordinary roof ventilation should amply suffice in factories where this dope is exclusively used. In this way it should enable aeroplane makers to do away with special precautions in the way of ground ventilation to disperse heavy gases, which precautions may under certain circumstances as to direction of wind or the arrangement of air outlets be uncertain in action.

"Titanine" in all respects conforms to the R.A.F. specification. It is also non-inflammable, and the makers point out that a burning wax vesta may be laid on a wing with the result that it will burn out without setting it alight, but merely charring a small space in the vicinity of the match. It is claimed that this test is unique.

Samples of material doped with "Titanine" show that it is very flexible and fills well into the pores of the fabric, and experience has shown that stuff so treated will stand exposure at the very least as well as anything on the market, though time alone can show whether it excels others in this respect. With the enormous output of aircraft at the present moment there is always room for anything new and good, and therefore one ventures to wish the newcomers to the aircraft industry success in their venture.



The Felling Works of Holzapfels, Ltd., at Newcastle-on-Tyne. (Reproduced from "The Syren and Shipping.")



**For Machine-Shops.**

The North British Rubber Company, of Edinburgh, are probably best known to the world at large as the makers of the Clincher motor and cycle tyres, but in the aircraft trade they are also known as the makers of rubbered fabric for airships and balloons, and also for aeroplanes in the days when rubbered instead of doped fabric was used; and, actually, one of the firm's most important activities is the supply of a special type of goloshes for the Chinese.

However, a by no means inconsiderable portion of the firm's business is done in rubber belting for the driving of machinery, and in fact the firm possesses the largest belt-press in Europe. The durability of N.B.R. belting is instanced by the fact that recently the firm received a complaint because a main driving belt supplied to a customer had only lasted for seventeen years, while its predecessors had stood up for twenty years!

It is claimed that rubber belting when well made and of suitable quality and properly fitted is superior to leather belting, and, owing to the advance in price of leather, it is now actually cheaper. Consequently, firms who are equipping aircraft factories, or aircraft departments of older-established works, will do well to investigate this belt problem.

The makers claim that rubber belting is particularly advantageous on small lathes and machine-tools having quick-reverse action. Exhaustive experiments with rubber belts against leather, in which every variety of dressing for the latter type was used, proved that when the reverse was applied at very high speeds the rubber took up the reverse instantly, whereas the leather allowed considerable slip, and then had to speed up gradually, not only losing several seconds, but setting up friction on the belt and pulley. Also, rubber belts resist damp and warm air better than any other kind, while their flexibility takes up shock and relieves strain on bearings and motors.

An interesting booklet is issued by the firm giving considerable information about the use and abuse of belts, and this should be in the hands of every foreman who has to deal with belt-driven machinery. The North British Rubber Company, whose address is Castle Mills, Edinburgh, will be pleased to send a copy to any applicant mentioning this paper.

**Fabric.**

In these days when aircraft have come into their own, so to speak, manufacturers of the different materials used in the construction of aeroplanes are waking up to the fact that, while even now it is well worth their while to study the requirements of the aeroplane industry, it will very shortly be necessary for them, in their own interests, to specialise in materials used in aircraft. This is especially true in the case of fabric for the covering of the wings, etc., of aeroplanes.

At present the fabric used is a high-grade Irish linen, and it is only natural that the York Street Flax Spinning Co., of Belfast, Ireland, should be handling a very large portion of the business, as they are reputed to be the largest linen manufacturers in the world, and therefore should be in a position to cope with the present demands.

The demand for aeroplane linen is, however, steadily increasing, owing to the fact that we are turning out aeroplanes literally by the thousand, and while quite a small machine requires something over 1,000 square feet of linen, the larger seaplanes require up to 4,000 square feet per machine, so it will be seen that this business is likely to develop on a gigantic scale. Of course, there are several other Irish firms besides the one mentioned above who are in a position to supply the proper grade of linen required in very large quantities, and it might be of interest to aeroplane makers generally to know this.

In addition to the material required for new machines, it must be borne in mind that machines have to be re-covered fairly often. Indeed, there is such scope in this particular market that one would not be surprised to hear of some enterprising North of Ireland firm laying down a factory specially to produce linen suitable for the aeroplane industry exclusively.

**Information about Carburettors.**

The Zenith carburettor, which is now fitted as standard to over 150 different makes of motor-cars, has now been proved equally efficient in the air, for it is fitted as standard to such well-known engines as the Green, Salmson (or Canton-Unné), Anzani, etc.



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Amongst the many notable achievements in which the Zenith has played an important part it may be mentioned that Mr. Hawker had two Zeniths on his Green engine which did so well in the "Daily Mail" Seaplane Circuit; the world's altitude record was beaten some time back by M. Garros with Gnome engine and Zenith carburettor, about the only time a carburettor has been used with success on this engine; and all the British Michelin trophies except one have been won by Green engines fitted with Zenith carburettors.

One of the main reasons why this well-known carburettor appeals to aviators is because it contains no moving parts, and therefore the adjustment cannot alter of its own accord; neither is there anything to stick up at a crucial moment.

The most usual sizes for aeroplane engines are the Nos. 42, 48 and 55 carburettors, the weights of which are 2 lbs. 14 ozs., 3 lbs. 7 ozs., and 3 lbs. 9 ozs., respectively.

The Zenith Carburettor Co., Ltd., whose address is 42, Newman Street, London, W., will be very pleased to send a booklet describing their carburettor on receipt of a postcard mentioning THE AEROPLANE. This booklet should be in the hands of all who are called upon to handle either aero or automobile engines, as it gives information concerning the general question of carburation which is of the greatest value, and may give the clues to all sorts of eccentricities in the behaviour of engines which cannot be accounted for by those in charge of them. Air mechanics of the R.N.A.S. and R.F.C. will find it of particular interest and very helpful in their work, whether they are concerned with the engines of aeroplanes, airships, heavy mechanical transport, light tenders, or officers' cars.

### A Grave Case.

An inquest was held at Dartford on Saturday concerning the death of Andrew Clarkson, aged twenty-seven, aeroplane mechanic, employed by Vickers (Limited). On Tuesday night he was riding his motor-cycle from Joyce Green to Dartford and came into collision with a van driven by Richard Tompsett, a farm bailiff. The shaft of the van severed the arteries in Clarkson's neck, and he bled to death. A witness named Mary Scruby stated that she held up Clarkson's head at his request, but Tompsett all the time sat in his van, which was on its wrong side of the road. When the man was dead he got down, touched the body twice with his foot, and told him to get up. The girl was remonstrating with him when the pony started off, and Tompsett went after it. He afterwards told Superintendent Fowle that Clarkson "killed himself," coming round the corner like an express train. Several witnesses swore that Tompsett was drunk, and he was committed on a charge of manslaughter.

### A Trial.

On Saturday, March 21st, another trial flight was made by Mr. W. Rowland Ding on the Mann twin-pusher biplane. During a flight lasting ten minutes the machine reached a height of 1,000 feet in a wind estimated to be 35 miles per hour. The speed of the machine was 69 miles per hour with the 100-h.p. Anzani running at 1,230 r.p.m. Mr. Ding reports the longitudinal and lateral control required no sort of attention and that the machine is inherently stable. The operations were brought to a close by a slight mishap which occurred when the machine was being taxied to the shed, when a sudden swerve to avoid a soft place pulled off one of the Palmer tyres. With minor alterations it is hoped to bring the speed of the machine up to 75 m.p.h.

### School and Weather Reports.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
Hendon ...	Fine	Fine	Fine	Windy	Windy	Windy	Very Fine
East Coast ...	Fine	Fine	Fine	Snow Windy	Snow Windy	Fine	Fine
South Coast ...	Finebut Dull	Fine	Fine	Windy	Dull & Windy	Fine	Fine
Lake District	Very Fine	Very Fine	Very Fine	Bliz'ad	Gale	Fine	Fine

Hendon.—AT THE GRAHAME-WHITE SCHOOL.—Instructors: Manton, Russell and Winter. Pupils with instr.; Prob. Flt. Sub-Lieuts. Feeney, Jackson, Mack and Greer. 8's or circs.:

Prob. Flt. Sub-Lieuts. Ferrand, Reid, Hards and Hood. Machines: Grahame-White biplanes.

AT THE LONDON AND PROVINCIAL AVIATION CO.'S SCHOOL.—Instructors: Messrs. W. T. Warren and M. G. Smiles. Strts.: Messrs. England, Derwin, Goodwin, Déschamps. 8's or circs. alone: Messrs. Watson, Henderson, Lincoln and Abbott. Certificate taken by Mr. P. A. Watson on March 16th in excellent style. Machines: Two L. and P. tractors.

AT THE RUFFY-BAUMANN SCHOOL.—Instructors: Messrs. E. Baumann and James Brothers. Pupils with instr. on 60-h.p. Caudron: Messrs. Bell (22), Kenworthy (22), Jackson (23), Roobaert (12), Blandy (18), King (15). Strts. alone on 45 h.p.: Messrs. King (32), Bell (24), Hydon (38), Blandy (16), Kenworthy (32), Roobaert (24), Cole (20), Jackson (36).

AT THE HALL FLYING SCHOOL.—Instructors: Messrs. J. L. Hall and J. Rose. Strts. or rolling: Messrs. Cinci, Mitchell, Lieut. Blyth, Lieut. Barker. 8's or circs. alone: Messrs. Furlong, Waterson and A. Davy. Certificate taken by Mr. J. McConnochie at 1,000 feet. Machines: Hall tractor biplanes. On Sunday Mr. J. L. Hall reached 4,000 feet on Brevet tractor machine.

AT THE BEATTY SCHOOL OF FLYING.—Instructors: Messrs. G. W. Beatty, J. Roche-Kelly and C. B. Prodger. Pupils with instr.: Messrs. Bond (44 mins.), Cornish (37), Roche (35), de Meza (15), Ormsby (37), Forbes (107), Bright (32), Laver (93), Vickers (30), Cooper (10), Leong (62), Morgan (7), Allcock (32), Chapelle (23), Fraser (34), Whincup (5), Bransby Williams (80), Wainwright (20), Watson (10), Boyle (15). Machine: Beatty-Wright dual-control and single-seater. Mr. Bransby Williams, junr. continued extra practice, and during the week did about 80 minutes' flying on the single-seater, Mr. Laver also flying the single-seater for about 30 minutes. During Friday afternoon the anemometer registered 28 miles an hour. School work was in progress giving instructions in wind flying to Messrs. Cornish, Ormsby, Forbes, Bright, Fraser and Wainwright.

Windermere.—AT THE N.A.C. WINDERMERE SEAPLANE SCHOOL.—Instructors: Messrs. W. Rowland Ding and C. L. Pashley. Pupils with instr.: Flight Lieut. L. L. Atherton (64 mins.), Lieut. Lindsay Bainbridge (20), R. Buck (45), C. A. Barber (30), A. Johnson (29), H. P. Reid (29), F. H. M. Macintyre (10), J. L. Parker (23), G. L. Railton (15), J. F. Ridgway (31), S. J. Sibley (21), and H. Slingsby (65). Extra practice: Messrs. J. L. Parker and P. D. Robinson. Machines: N.A.C. 50-h.p. Gnome biplane, 50-h.p. Gnome dual-control Avro. Mr. C. L. Pashley, of Shoreham fame, has joined the instruction staff.

## MISCELLANEOUS ADVERTISEMENTS

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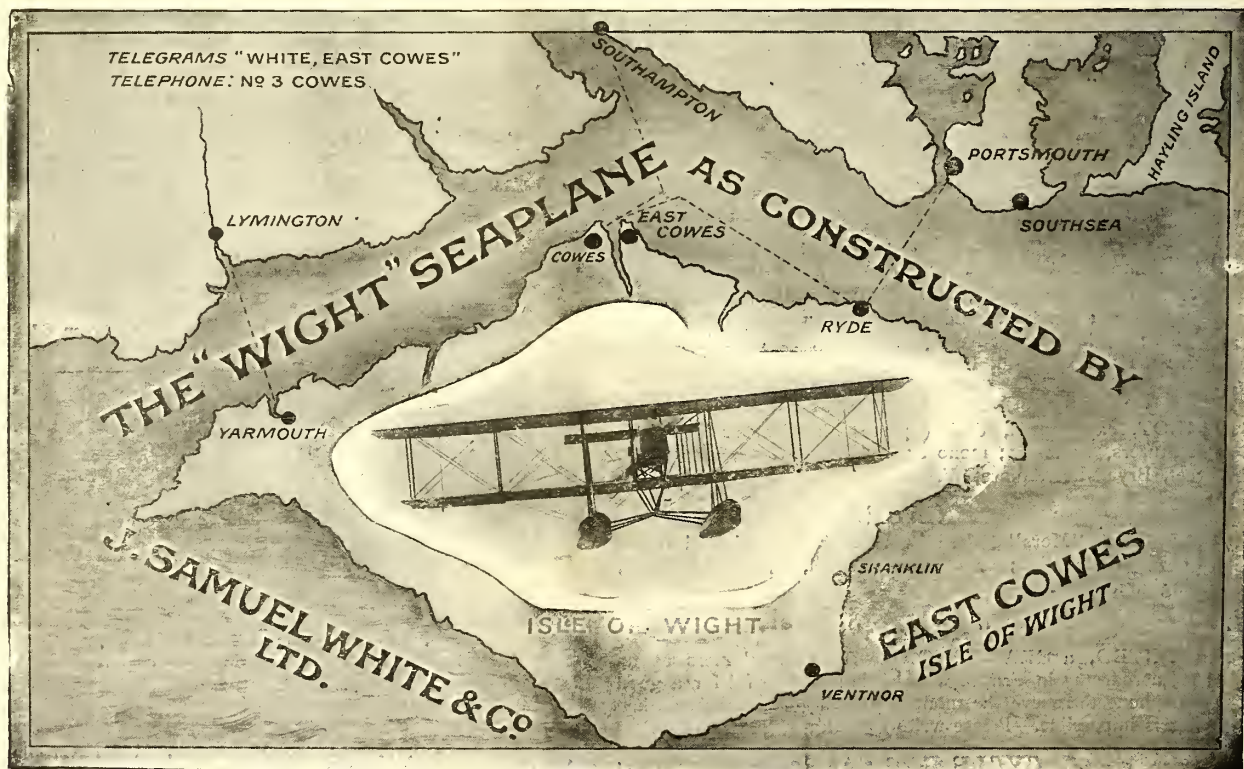
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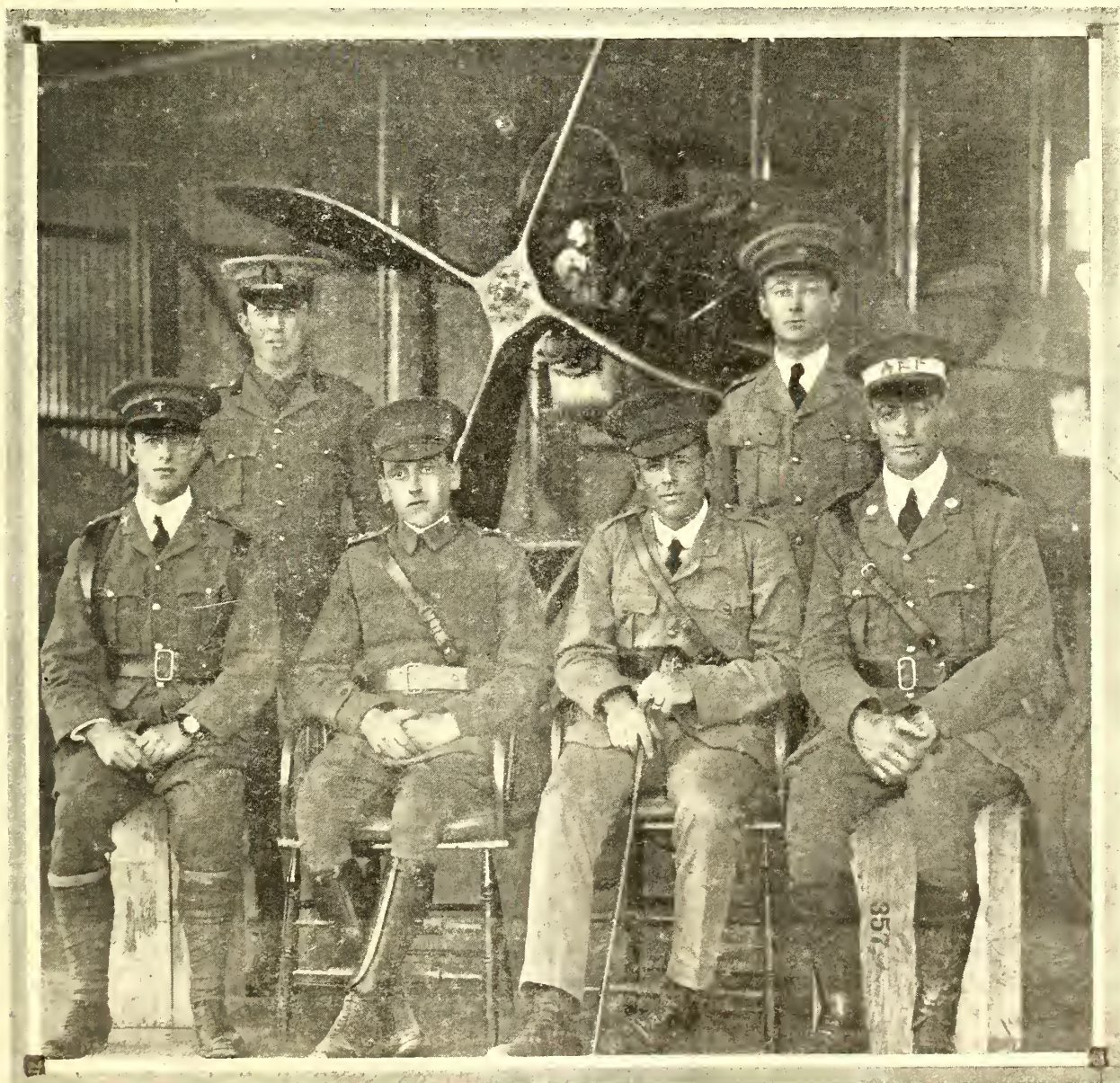
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Edited by C. G. GREY. ("Aero-Amateur")

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No. 13

## ADVANCE AUSTRALIA.



THE NUCLEUS OF THE AUSTRALIAN FLYING CORPS:—Standing on left Lieutenant Williams, on right Captain White. Seated, left to right, Lieut. Merz, Captain Henry Petre (Chief Instructor), Lieut. Eric Harrison (Assistant Instructor), and Lieut. Maxwell.



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## On the Locating of Mistakes.

There are times when the best of us "puts his foot in it"—as the vulgar phrase has it—either by talking or writing of that of which he wots not—otherwise known as "talking through his hat"—or by saying or writing that which is too painfully true—which seems, perhaps, the greater offence of the two. Personally, the present writer is perfectly aware of his own talent in this direction—with both feet at once, as deep and as firmly as ever Mr. Thomas Atkins put his into Flanders mud.

For instance, last week he was sternly reproved by a most serious engineer, and this week by a charming lady, for scoffing at the use of parrots as detectors of imminent aircraft. True, the defenders of these rancous birds do not claim for them the same super-psittacal genius as did the paragraph at which the jeer was directed, but it is now firmly established that, given a parrot of unimpaired eyesight and hearing, located with a clear field of fire, so to speak, in the direction of the sky, he or she, as the case may be, will give due warning of approaching flying machines.

Being compelled, for his sins, to live opposite to a parrot which is always moved by fine weather to practise scales and *portamentes* very much out of tune and *fortissimo* for hours at a time, the writer regards the cure as worse than the disease; but, being convinced that the case for the inherent talent of the genus psittacus has been established, he apologises handsomely to all parrots, past, present, and future—and thus is one foot extricated.

Incidentally, long after the war is over, there will be a tragic tale to tell about a famous Service aviator and certain much-travelled parrots. Not a word must be breathed about it at present, but it is comforting to know that the anti-aircraft defences of London have lately been considerably increased by the addition of considerable numbers of these aircraft detectives.

### The Other Foot.

As to the other foot, a certain regular and critical reader of this paper has reproached the writer with the fact that the leading article of last week was badly written, which is probably true; that it was gloomy, which was intentional; and that it was all in praise of the Germans, which it was not. As to the gloom, it was explained in the article itself that a general policy of gloominess, like the gloom of London, would bring home to many people the fact that there really is a war going on, and the so-called praise of the Germans was merely an earnest endeavour to show that, being up against so efficient and effective an enemy, it behoves us to "quit fooling" and set seriously to work to defeat him.

Anyone who thinks seriously about the blatant folly of the people of this country must be forced to the conclusion that the only way to bring the true state of affairs home to them is to produce such an atmosphere of gloom, in the Press and in the streets, as to drive the population to drink, and then—to forbid them the drink.

Thus the lighting question and the drink question would both be settled at once, and the Government's prohibition of each would be recognised as a salutary

measure in the interests of National Efficiency—the which is a Teuton god who has enabled his people to do astonishing things. He is a minor deity whose kindly attention is much needed in this country, and he is the avowed enemy of our own pet god, known commonly as Muddling Through.

Every soldier worth his salt admires the German military system, even though he may hate the way it is administered, and those of us who agree with them in admiring things German, and in wishing that they could be grafted onto such national virtues as this country already possesses, are merely in the position of the famous preacher who confessed to a passion for light music—operatic or music-hall—and justified his seeming fall from grace by saying that he didn't see why the Devil should have all the best tunes.

### Enemy's Virtues.

Similarly we do not see why the Germans should have all the military and national virtues of law, order, discipline, patriotism, belief in their leaders, military enthusiasm, perfect organisation, and so forth, in which this country as a whole is conspicuously lacking—especially in discipline and organisation—always excepting the Fleet and the Expeditionary Force.

Fortunately there are hopes that things may be different after the war, for we shall then have several millions of young men—the fathers of the next generation—who have learned by bitter experience what lack of discipline and organisation have cost us, and what they have enabled the Germans to do, despite bad diplomacy and overwhelming numbers of enemies, and when those young men come home they will probably turn to the worship of National Efficiency. If they do not, we may as well make up our minds to become first a German, and ultimately a Russian, colony, and those of us who do not like the idea had better emigrate to America, and be ruled by German-Irish political bosses.

### National Efficiency.

The proof of the value of National Efficiency is the fight that Germany has put up, although she was not ready for the war when it came. Of course, any journalist will tell you that Germany made war at her own chosen time, and not until she was fully prepared for it. As a matter of fact, she did not. She merely went to war in July last because she was convinced, rightly or wrongly, that if she did not strike first she would be struck, and because of National Efficiency she was able to get ready to strike before anyone else.

The position was practically that of a lot of chaps in a street row, sparring up to one another and saying, "You 'it me, an' see wot yer'll get!" Such a row is generally started by the bullying attitude of one of them, and the bully is generally sat upon at the finish; but, if the bully hits first and hits hard, he certainly scores at the start—and a bully may be, and frequently is, an athlete in a state of muscular fitness which one may justifiably admire as an example of physical efficiency, even if one hates him for his mental attributes.



This war had to come, as everybody in the Navy and Army has known for years, and it really matters not at all who started the row, but all the evidence is in favour of the theory that Germany's chosen "Day" was just a year later. Here are three minor proofs that it did not come at the desired moment.

An English lady who has lived in Germany for many years, and who was engaged to a German officer, returned to England after about three months of war. She told me personally that, when war with Russia was actually declared, a great number of the officers of the garrison town in which she lived were away on summer leave, and had to be fetched back after the outbreak of war.

#### *A Sailor's View.*

A naval officer, with whom I was arguing on this question, pointed out that, when war broke out, the only first-class cruisers Germany had on the high seas were the "Scharnhorst" and "Gneisenau," whereas, if she had intended war to start when it did, she would have had at least a dozen of her biggest and fastest battle cruisers out, and would have done immense damage to our merchant marine in the first month of war. Also that we should have had to detach so many of our best ships to catch these commerce destroyers that we should have materially weakened our Home Fleet, and raids on our coast would have been much more frequent and destructive.

Such damage as the German ships have done, with a few cruisers and converted liners, is the result of National Efficiency demanding that they should always be ready to act.

#### *Aerial Unreadiness.*

The third proof is Germany's air fleet. Does anyone think seriously that Germany would have gone to war with less than a dozen modern Zeppelins and only 1,000 to 1,500 aeroplanes of all sorts? Those who were in close touch with the German motor trade know that for six months or so before the war the Mercedes, Benz, Argus, Maybach, and other aero-engine makers were rushing big motors through as hard as they could. The "Taube" type monoplanes, mostly with 70-h.p. engines, had already been condemned in favour of biplanes, big and little, with 100-h.p. engines.

At the rate at which the engines were coming through—all told, probably a hundred a week—Germany would have had a fleet of at least 3,000 aeroplanes by August, 1915—allowing that the 1,500 or so existing in 1914 were smashed in practice and training flights.

Also, the big gun-carriers, with which Germany was beginning to experiment in 1914, were not ready, though one hears rumours through neutral countries of enormous craft now flying successfully.

It was only in 1914 that the new Zeppelin works at Potsdam were started, and it was only in 1914 that the Schütte-Lanz firm began building in earnest. Obviously, their combined output by August, 1915, would have been considerable, and the airships already existing would have been carefully nursed against possible damage.

Thus it is perfectly clear that, so far as her air fleet is concerned, a delay of a year would have made all the difference, and the work in hand a month or so before the war distinctly points to a climax being expected in 1915, and not in 1914.

Once more it is necessary to point out that the excellence of the work done by the German air fleet—and it would be foolish to deny its excellence—has been due to National Efficiency demanding that whatever the size of the fleet might be, that fleet should be efficient with such machines as it possessed.

The R.F.C. was smaller, possibly more efficient, and certainly possessed better pilots and machines than

the Germans did at the beginning of the war, but no one in the R.F.C., officer or man, would venture to deny the efficiency of their enemy's organisation, especially in co-operation with artillery—a branch of the service in which we were notoriously weak, despite warnings in the past from those who saw the war coming.

Even the recently issued official documents on the South African rising show that the war broke out before Beyers and Maritz had time to get their scheme for a rebellion properly worked out. Another year would have made a very serious difference.

#### *Reasons for Thankfulness.*

In fact, the more one studies the question the more one is forced to be thankful that war broke out when it did, and that Germany was forced to fight before her preparations were quite completed.

In a year's time Germany would have been far more formidable on earth, air, and sea, whereas this country would have been little if any better off, France would have been still more weakened by political graft, and only Russia's position might have been strengthened by the completion of some of the numerous strategic railways which had been planned of late years.

In this country, Mr. Churchill would certainly have done his best for the Navy—including the Royal Naval Air Service—but the Army would have probably deteriorated, thanks to internal troubles over Home Rule, the resignation of Sir John French, and various other deleterious influences emanating and originating from the Haldane-Seely regime, and the whole state of the country would have been weakened by constant political intrigues, the strong and able men of the Government, like Sir Edward Grey, Mr. Churchill, and Mr. Lloyd George having their good work hampered by incompetents like Messrs. McKenna, Tennant, Runciman, and their self-seeking hangers-on.

As a result, the R.N.A.S. would not have got hold of as much money to spend in the whole year as it has already had since war began, and the R.F.C. would have consisted at the end of 1915 of perhaps—with luck—the seven squadrons—originally planned in 1912—mounted on just whatever the Royal Aircraft Factory chose to tell them was good for them, which would mean just what the staff of the R.A.F. had arrived at in their scientific endeavour to approach the performances of the best machines built by independent constructors whom they were unable to squeeze out of existence—owing to the fact that the Navy insisted on keeping the despised "trade" alive.

#### *The Army's Debt to the Navy.*

In this connection, I hope that officers of the R.F.C. realise that but for support from the Admiralty every independent aeroplane constructor would have been squeezed out of existence before the War, with the exception of a few big armament firms, whose influence at the War Office is greater than that of the R.A.F. Those officers who have flown fast machines, and then have endeavoured to climb out of Archibald's reach on certain of the R.A.F.'s products, will realise what such extinction would have meant.

Here, again, we have much to learn from Germany. For the benefit of new readers, perhaps, I may point out once more that, during the years 1912, 1913, and 1914, the German Government assisted private aeroplane constructors in every possible way. Big prizes were given for flying competitions in which German officers were encouraged to compete. Big orders were given to the makers of the machines which performed well. Aeroplane racing was regarded officially in Germany as a sport which was fit for officers, when in this country officers were forbidden even to fly at public aerodromes, except when forced to land there, or when taking away a Government machine which happened to be there. Aviators in this country were looked upon as circus performers, though one notices

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that both Services were glad enough to give away commissions broad-cast when the despised aerial acrobats were wanted for the war.

#### What Might Have Been.

All this was pointed out a couple of years before the war, and Mr. Whittaker even sketched out a thoroughly workable scheme for a Territorial Flying Corps, which, if it had been taken up at the time, might have been in active operation last year, and would have increased our supply of pilots very considerably. Also, it would have avoided the trouble and danger of rushing pupils through their course of training, as has been necessary since war began.

All our troubles arise simply from lack of organisation and National Inefficiency. We have learned the use of big guns in the field from Germany, and have beaten the Germans at their own game. We have learned the art of trench fighting from them, and have beaten them at that. Can we not learn the art of organisation and the virtue of efficiency also?

#### What Might Be.

With better organisation and increased efficiency we could double our output of aircraft, for example, and, presumably, could increase the output of other munitions of war to a great extent also.

There are faults everywhere, among the manufacturers as well as among Government officials, and in Government departments. Foremen and workmen in private firms make mistakes which hang up deliveries

as much as do the mistakes of Government inspectors and Government clerks. Bad office management in private firms causes as much delay as does red tape on either side of Whitehall, or in the Admiralty Arch.

Mr. Lloyd George wants a "strong pushful man" to organise the engineering industry, so that it may supply munitions of war more rapidly. If he finds him he will probably do more harm than good, for a strong pushful man will inevitably get everyone's back up. At any rate, one hopes that no one of that nature will try experiments with the aircraft industry.

What is really needed is a mutual friend who will simply wander round in an amicable manner from firm to firm looking for snags that are holding things up, find out what is causing delays or difficulties, and report those cases to someone at the very top of things who has the power to remove obstacles where obstacles exist, and twist tails where tail-twisting is necessary. If things were done in that way outputs could be considerably increased, not only in the aircraft industry, but in every other branch of engineering as well. But the difficulty is to find people who know each branch of the industry thoroughly, who have no axes to grind, and who can be trusted to tell the truth without fear or favour. They must exist somewhere, and they would be somewhat difficult to find, but they would be worth finding, for they would assist materially in producing National Efficiency.—C. G. G.

### The R.N.A.S. Comforts Fund.

It is probable that the many readers of this paper who have contributed to the R.N.A.S. Comforts Fund may be interested to know how their cash contributions have been laid out. The dissection of the many tradesmen's bills involves the expenditure of considerable time, and an account is therefore given of the money spent during the first three months of the Fund's existence. A further statement will be published as soon as possible.

#### OCTOBER, 1914.

	£	s.	d.
Jerseys .....	17	11	0
Gauntlet Gloves ...	0	15	0
Flannel Shirts .....	6	5	0
Cardigans .....	5	3	6
Handkerchiefs ...	3	16	0
Pants (Wool) .....	9	18	0
Meat Lozenges, Soap, Chocolate and Notepaper...	1	17	4
Belts .....	1	13	0
Socks .....	0	11	9
	£47	10	7

#### NOVEMBER, 1914.

	£	s.	d.
Cardigans .....	11	0	3
Socks .....	3	0	6
Jerseys .....	15	13	10
Vests (Wool) ...	5	5	0
Pants (Wool) .....	13	4	0
Shirts .....	5	17	0
Scarves .....	2	6	0
Two Cases made and Rail Ex- penses .....	0	15	0
	£57	1	7

#### DECEMBER, 1914.

	£	s.	d.
Spent on—			
Soap .....	0	7	4
Paper and Pencils ..	0	9	0
Sacks (Hessian)...	2	7	11
Postman (Xmas Box) .....	0	10	0
Gramophones and Records .....	59	5	0
Sweets (Pepper- mints) .....	0	5	0
Socks .....	1	2	6
Scarves .....	1	0	0
Mittens .....	1	0	0
Pants (Wool) .....	46	8	6
Vests (Wool) .....	35	10	10
Cardigans .....	52	1	0
Jerseys and Sweaters .....	38	9	0
Shirts (Flannel) ...	17	0	5
	£255	16	6
TOTAL EXPENDITURE.			
	£	s.	d.
Oct., 1914 .....	47	10	7
Nov., 1914 .....	57	1	7
Dec., 1914 .....	255	16	6
	£360	8	8

For three months ending  
December 31st, 1914.

During the past week a consignment of garments has been sent to a seaplane-carrying ship, and something like 900

articles are being sent to No. 1 Squadron, R.N.A.S., now abroad, under Wing Commander Longmore, R.N.

The following cash contributions have been received during the week:—Mrs. Haes, £5; D. H., £1; Refunded by G.W.R. on carriage, 7s. 11d.; Vickers Ltd. (Woodworkers, Aeroplane Dept.), 6s. Total for week, £6 13s. 11d. Total to date, £894 os. 6d.

Further contributions in cash and kind should be sent to Mrs. Sueter, The Howe, Watlington, Oxon.

### Royal Aero Club.

Presiding at the annual general meeting of the Royal Aero Club on March 23rd, at the club premises, in Piccadilly, Professor A. K. Huntingdon mentioned that 297 aviators' certificates had been granted during the year 1914, the total number issued by the Club at December 31st being 1,002. The number issued so far this year was 117, making a total to date of 1,119.

At the beginning of the war the club rendered a service to its country by issuing an appeal through its chairman (the Marquis of Tullibardine) inviting civilian aviators to volunteer their services in case of emergency. Almost all of the civilian aviators responded to the call, and had since been engaged on naval or military work.

Apart from the large number of members of the club engaged in the manufacture and testing of aircraft, about 400, as far as could be ascertained, were on active service. The casualties in the flying services had so far not been great, the number reported killed or missing since the commencement of the war being estimated at thirty-five. Eleven of these casualties were the result of accidents in this country.

At the end of last year the club, with the approval of the Admiralty and War Office, instituted and agreed to administer a fund for the benefit of the Flying Services, the subscriptions to which now amounted to £7,707.

### Experienced Men Needed.

Attention is drawn to the fact that the Aeronautical Inspection Department, R.F.C., South Farnborough, require aeroplane erectors, fitters, and tinsmiths. No particulars are available at the moment concerning wages or hours of work. Presumably regular union rates are paid, and men who are fortunate enough to secure work in this department may rest assured that whatever they do will be as much for the good of the country as if they were actually with the Royal Flying Corps on active service.

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## Naval and Military Aeronautics.

### GREAT BRITAIN.

From the "London Gazette," March 23rd, 1915.

ADMIRALTY, MARCH 17TH.

ROYAL MARINE ARTILLERY.—Lieutenant C. H. Collet, D.S.O., is granted the temporary rank of captain whilst holding the appointment of flight commander in the Royal Naval Air Service. Dated February 23rd, 1915.

ROYAL MARINE LIGHT INFANTRY.—Lieutenant C. E. Robinson is granted the temporary rank of captain whilst holding the appointment of flight commander in the Royal Naval Air Service. Dated February 23rd, 1915.

MARCH 20TH.

ROYAL NAVAL AIR SERVICE.—Flight Commander J. D. Maskworth to be squadron commander. Dated March 18th, 1915.

The undermentioned acting flight sub-lieutenant has been confirmed in the rank of flight sub-lieutenant: S. Medlicott. Dated December 4th, 1914.

WAR OFFICE, MARCH 23RD.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—The undermentioned appointment is made:—

Adjutant—Captain A. F. S. Leggatt, Royal Scots (Lothian Regiment), and to be seconded. Dated February 23rd, 1915.

\* \* \*

A Supplement to the "London Gazette" of March 23rd, published on March 24th, contains the following military appointment:—

WAR OFFICE, MARCH 24TH.

REGULAR FORCES.—ESTABLISHMENTS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—J. W. Woodhouse to be second lieutenant (on probation). Dated March 12th, 1915.

\* \* \*

A Third Supplement to the "London Gazette" of March 23rd, published on March 25th, contains the following military appointments:—

WAR OFFICE, MARCH 25TH.

REGULAR FORCES.—The undermentioned non-commissioned officer to be second lieutenant for service in the field:—

GENERAL LIST.—Corporal D. K. Johnstone, Bombay Light Horse, to be temporary second lieutenant for service in the field, and to be retained for service with Royal Flying Corps. Dated February 26th, 1915.

REGULAR FORCES.—COMMANDS AND STAFF.—The undermentioned appointment is made:—

PERSONAL STAFF.—Aide-de-Camp—Captain Sir A. H. M. Sinclair, Bart., 2nd Life Guards, and to be seconded. Dated March 18th, 1915.

ESTABLISHMENTS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—H. Burchall to be second lieutenant (on probation). Dated March 19th, 1915.

\* \* \*

A Fourth Supplement to the "London Gazette" of March 23rd, published on March 26th, contains the following appointments:—

WAR OFFICE, MARCH 26TH.

REGULAR FORCES.—COMMANDS AND STAFF.—The undermentioned appointment is made:—

DEPUTY ASSISTANT QUARTERMASTER-GENERAL.—Major H. Musgrave, D.S.O., Royal Engineers, vice Major C. R. Woodroffe, Royal Artillery. Dated March 4th, 1915.

TRAIN CONDUCTING OFFICER.—Graded for purposes of pay as Staff Captain—Dated February 1st, 1915. V. Ker-Seymer, and to be temporary captain.

ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—The undermentioned flight commanders to be squadron commanders, with the temporary rank of major. Dated March 17th, 1915: Captain G. E. Todd, Welsh Regiment, and Captain H. C. T. Dowding, Royal Artillery.

The undermentioned flying officers to be flight commanders with the temporary rank of captain. Dated March 17th, 1915:

Lieutenant H. D. Harvey-Kelly, D.S.O., Royal Irish Regiment, and Lieutenant W. R. Freeman, Manchester Regiment.

SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—The undermentioned to be second lieutenants (on probation): S. W. Caws. Dated February 25th, 1915. A. G. Clark. Dated March 24th, 1915.

\* \* \*

From the "London Gazette," March 27th, 1915.

A Supplement to the "London Gazette" issued on Saturday, March 27th, contains the following:—

WAR OFFICE, MARCH 27TH.

His Majesty the King has been graciously pleased to approve of the appointment of the undermentioned Officers to be Companions of the Distinguished Service Order, in recognition of their gallantry and devotion to duty whilst serving with the Expeditionary Force:—

LIEUTENANT (TEMPORARY CAPTAIN) GEORGE IVAN CARMICHAEL, Royal Artillery and Royal Flying Corps.

For conspicuous gallantry, daring, and ability throughout the campaign.

On the 11th instant he destroyed the rails at Menin Railway Station by dropping a bomb, weighing 100 lbs., thereon from a height of only 120 ft.

On the return journey his engine was damaged by a bullet, which necessitated his flying at a height of less than 200 ft.

Captain Carmichael has also rendered valuable services in observing artillery fire.

LIEUTENANT (TEMPORARY CAPTAIN) GEORGE FREDERICK PRETYMAN, Somerset Light Infantry and Royal Flying Corps.

For great gallantry, ability, and initiative, on numerous occasions, especially on the 12th instant. The clouds being low he had to fly very low for a considerable period all along the German positions to ascertain their movements, being exposed the whole time to a very heavy fire.

On the 13th instant he blew up the centre of a train at Don Station, damaged a building outside which a battalion of the enemy were forming up, and drove off a German aeroplane.

\* \* \*

His Majesty the King has been graciously pleased to confer the Military Cross on the undermentioned Officers in recognition of their gallantry and devotion to duty, whilst serving with the Expeditionary Force:—

LIEUTENANT W. R. FREEMAN, The Manchester Regiment and Royal Flying Corps.

For gallantry, ability, and very valuable work performed.

Located the position of German batteries on 10th instant, and conveyed the information by wireless messages from his aeroplane to our Artillery, and, although his propeller and planes were pierced by the enemy's bullets, he remained aloft for more than five hours during the day.

2ND LIEUTENANT (TEMPORARY CAPTAIN) L. A. STRANGE, Dorsetshire Regiment and Royal Flying Corps.

For gallantry and ability on reconnaissance and other duties on numerous occasions, especially on the occasion when he dropped three bombs from a height of only 200 feet on the railway junction at Courtrai while being assailed by heavy rifle fire.

\* \* \*

From the "London Gazette," March 29th.

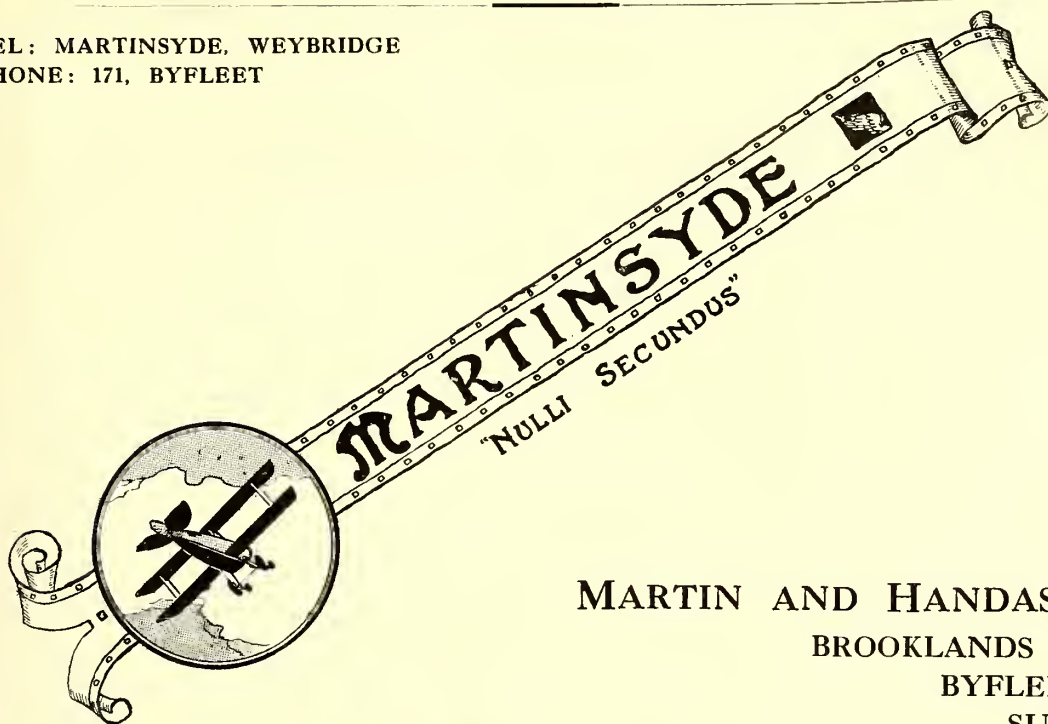
WAR OFFICE, MARCH 29TH.

REGULAR FORCES.—SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Second Lieutenant H. C. Barber to be lieutenant. March 16th.

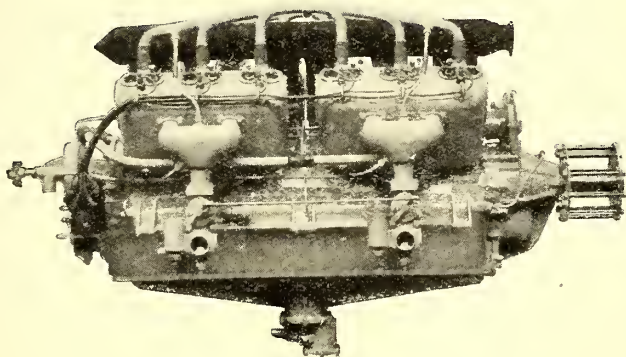
The undermentioned second lieutenants (on probation) are confirmed in their rank: R. Orme, G. C. R. Mumby, L. M. Wells-Bladen, A. Huggins, F. Jolly, J. E. Storey, S. C. Callaghan, the Hon. E. A. Stonor, T. V. Smith, R. B. Bourdillon, and G. H. B. McCall.

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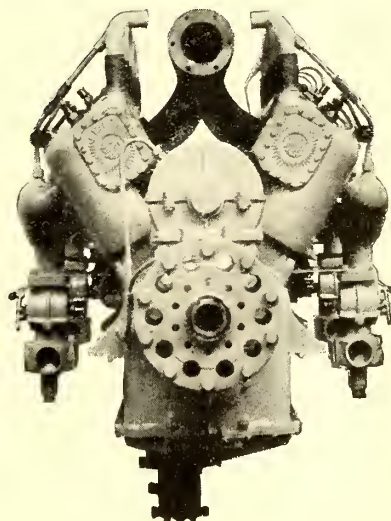


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## NAVAL.

The following appointments were made by the Admiralty on March 24th:—

ROYAL NAVAL AIR SERVICE.—A. E. Gendle has been granted a temporary commission as Lieutenant, Royal Naval Volunteer Reserve, with seniority of March 23rd, and appointed to the "President," additional, for R.N. Air Service.

R. M. Wynne-Eyton and W. E. Slingsby, both granted temporary commissions as Sub-Lieutenant, Royal Naval Volunteer Reserve, with seniority of March 23rd, and appointed to the "President," additional, for duty with R.N. Air Service.

\* \* \*

The following appointment was made at the Admiralty on March 25th:—

ROYAL NAVAL AIR SERVICE.—Mr. A. V. Thompson has been granted a temporary commission as lieutenant, R.N.V.R., and appointed to the "President," additional, for duty with the Royal Naval Air Service, to date March 22nd.

\* \* \*

The following appointments were announced at the Admiralty on March 29th:—

ROYAL NAVAL AIR SERVICE.—Acting Flight Commander F. K. McClean, confirmed in the rank of flight commander, with seniority February 2nd, and promoted to the rank of acting squadron commander, to date February 18th.

The undermentioned acting flight lieutenants and probationary flight sub-lieutenants have been confirmed in rank of flight lieutenant, with original seniority, and reappointed to the "President," additional, for Royal Naval Air Service, to date as stated; J. R. W. Smyth Pigott, February 25th; C. M. Murphy, March 19th; G. E. Livock, W. G. Moore, W. S. Newton-Clare, C. B. Dalison, T. V. Lister, and P. Legh, March 27th.

Probationary Flight Sub-Lieutenant L. H. Hardstaff, to the "President," additional, for Central Flying School, Upavon, to date March 29th.

Mr. J. P. Curwen entered as temporary sub-lieutenant, R.N.V.R., with seniority March 27th, and appointed to the "President," additional, for duty with R.N.A.S., to date March 27th.

\* \* \*

The Secretary of the Admiralty made the following announcement on March 24th:—

The following has been received from Wing-Commander Longmore:—

I have to report that a successful air attack was carried out this morning (Wednesday, March 24th) by five machines of the Dunkirk Squadron on the German submarines being constructed at Hoboken, near Antwerp.

Two of the pilots had to return owing to thick weather, but Squadron Commander Ivor T. Courtney and Flight Lieutenant H. Rosher reached their objective, and, after planing down to 1,000 ft., dropped four bombs each on the submarines. It is believed that considerable damage has been done to both the works and two submarines. The works were observed to be on fire. In all, five submarines were observed on the slip.

Flight Lieutenant B. Crossley-Meates was obliged by engine trouble to descend in Holland.

Owing to the mist the two pilots experienced considerable difficulty in finding their way and were subjected to a heavy gun-fire whilst delivering their attack.

\* \* \*

Squadron Commander Courtney is an officer of the Royal Marine Light Infantry and has passed most of his career as an aviator as an instructor at the R.N. Flying School at Eastchurch.

Flight Lieut. Rosher is one of the first batch of pilots turned out from the R.N. Air Station at Hendon under Squadron-Commander Porte, R.N., who has produced some very fine fliers.

Flight Lieut. Crossley-Meates, now interned in Holland, is another of the new draft. He took part in the first Ostend raid, which proved abortive owing to bad weather. In crossing the Channel he ran into a cloud which so upset his orientation that

he could not tell whether he was right side up or not, till his revolver fell out of his pocket and afforded circumstantial evidence that he was not. Before joining the R.N.A.S. he was a medical man.

The submarines, to which reference is made, were under construction at the Cockerill Yard at Hoboken, a firm of English origin which has large works also at Liège. Both shops are now being run by the Germans with Belgian labour. It is to be hoped that considerable damage was done to materiel and personnel.

\* \* \*

The "Telegraaf" (Amsterdam, March 25th) learns that Flight Lieut. Crossley-Meates, who landed near Kruningen, said that he, with four other officers, left Dunkirk at 5.25 a.m. in foggy weather. They had orders to fly to Hoboken, where they dropped altogether twenty bombs on Cockerill's shipyard. They could not say what were the results, but they observed smoke rising afterwards. He afterwards lost his way in the fog, and was greatly disappointed to learn that he had landed in Holland, as he thought he was in France. He was armed with a revolver and cartridges, which he handed to the Burgomaster of Kruningen. Before leaving his machine he emptied the tanks and broke the connections. He lunched with the Burgomaster, and was afterwards brought to Groningen.

\* \* \*

The "Tyd" says:—"It is certain that two of the aviators did considerable damage to the submarines lying on the slips and to the workshops. One boat was completely destroyed, and others were seriously damaged, but the Germans prevent details from becoming known. The bravery of the British aviators has won them the sympathy of the inhabitants of Antwerp. The British did not drop bombs on the town, but cruised around above the works, and it is extraordinary that the Germans did not hit them."

The "Nieuwe Rotterdamsche Courant" learns from Antwerp that one of the British aviators made a sudden descent over the Cockerill works until he was only 300 feet above the ground.

\* \* \*

All concerned with aviation will note with pleasure the appointment of Squadron-Commander F. K. McClean. His services to the aeronautical branch of the Navy, long before the R.N.A.S. was thought of, were great, and one hopes that his recent promotion is only a step towards the honours which are his due, for those who have served with him agree that he has won his present rank on his efficiency as an officer without any other considerations being counted.

\* \* \*

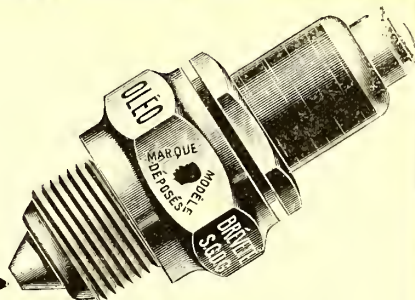
An officer in one of the destroyer flotillas writes:—

"With the other destroyers we were off the German coast some time ago, first off the Ems and later off Heligoland; but missed a certain amount of sight-seeing. The Germans created a diversion over our heads at lunch-time by sending a Taube over us in the harbour. I believe she dropped a bomb in a ploughed field, much to the delight of the newspapers. As a matter of fact, she had a hot time of it from shore anti-aircraft guns, but continued undismayed, and probably obtained a rough estimate of ships in the vicinity.

"The ships that did go off Heligoland with our air raiders saw two Zeppelins and five Taubes. The Zeppelins remained about three miles off, and drew away still farther when two of our ships went over to attack them. The Taubes hovered at a good height, and dropped a lot of bombs, but made no hits at all. We won a moral victory on —, for we were within sight of German aircraft (which are in wireless communication with their ships) for eight hours and within twenty-five miles of their coast, but no ships appeared.

"I do not put much faith in the fighting value of Zeppelins. At night they could drop things on a town, but could not pick out and make accurate shooting at important objects. By day I do not think that they would venture near an aeroplane or an anti-aircraft gun. In a sea fight where a ship is hotly engaged they might come up unnoticed and drop a few tons of T.N.T., in which case, exit ship! [A good many Zeppelins would be needed.—Ed.] But in a general action between two hotly-engaged ships the Zeppelins would forget which was their ship, and could not well recognise them from above."





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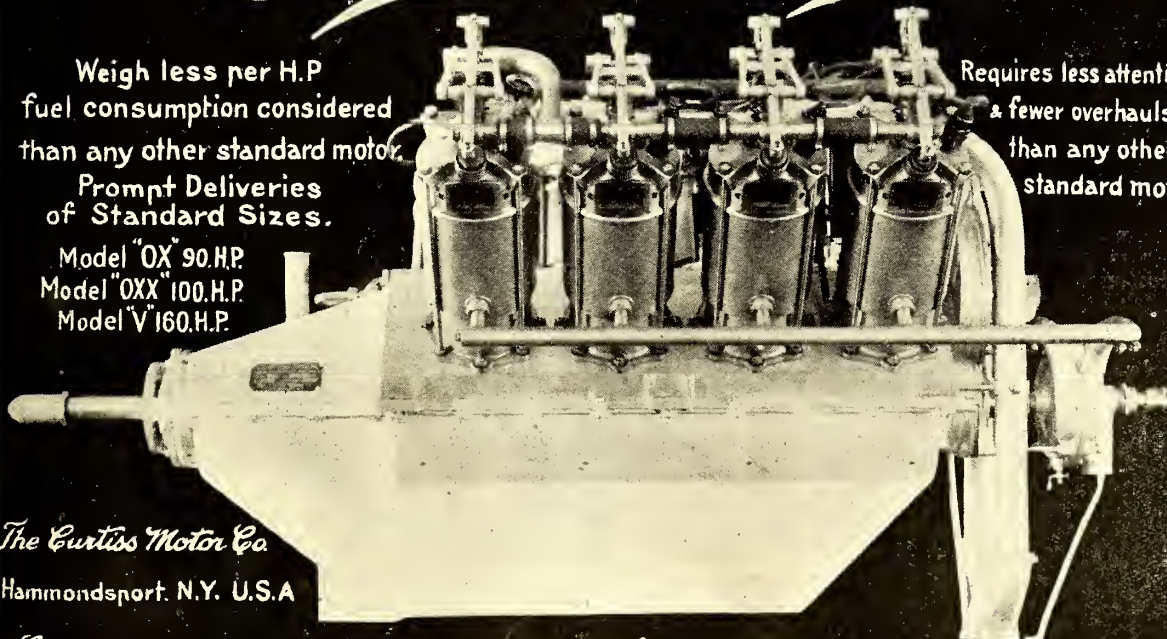
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Some discussion has arisen through the Admiralty's decision to reorganise the Anti-Aircraft Service. The proposal is to increase the duration of the watches from four to six hours, doubtless with the idea of having bigger crews on the spot in the event of the summer weather encouraging enemy air raids on London.

As this Service is almost a voluntary one it seems likely that the change will involve the resignation of many useful men, because something like 80 per cent. of the personnel consists of business-men, and while the strain of a nightly vigil of four hours can be borne by physical and moral effort, it is hopeless for men who have business cares to attempt the longer watch. Many of the men concerned, who have made considerable sacrifices in giving up sleep and recreation throughout the winter watching for the aerial invaders that did not come, feel very sore at being either "turned down" or required to perform tasks outside their original contract. In fact, "H.M.S. Flatroof" seems distinctly disaffected at the moment.

Further on this subject, Aeris Nauta writes in the "Times":—"In addition to increasing the hours of duty the Admiralty has determined to pay half the amount hitherto given, and such an important point of procedure is here involved that it seems highly desirable that more light should be thrown upon it.

"When the Anti-Aircraft Corps was formed the Admiralty decided to give the men payment on the scale given to A.B. seamen, together with the ordinary lodging and subsistence allowance. This has now been altered without notice, and the question naturally arises whether other men who have signed on for the war and are on active-service rations—for such is the position of the Anti-Aircraft Corps—are liable to similar fluctuations of pay and by what authority this can be done."

#### MILITARY.

The Field-Marshal commanding the British Forces in France has reported as follows:—

March 22nd.

(3) On the 20th and 21st the enemy's aircraft displayed unwonted activity, weather conditions being particularly favourable. Bombs were dropped on Lillers, St. Omer, and Estaires. The material result was slight, the only buildings which were damaged being private property neither occupied by soldiers nor used for military purposes. The total damage to personnel was three women and four civilians killed, and about half a dozen civilians wounded. These bombs were dropped from a great height, in one case as much as 9,000 feet. This, of course, prevented the aviators from taking deliberate aim at any military objective.

This procedure is a great tribute to the respect in which our Royal Flying Corps is held by the enemy, as the aviator increases his chances of escaping pursuit by taking advantage of the time required for our aircraft to get the necessary height from which to engage.

\* \* \*

The following passages relating to aircraft appear in the descriptive account which has been communicated by an Eye-witness present with General Headquarters, continuing and supplementing the narrative published on the 23rd instant.

On Saturday and Sunday, the 20th and 21st, the enemy's aeroplanes displayed unusual enterprise and daring by dropping bombs on Estaires, St. Omer, and Lillers, little damage being done at any of these places, as has already been described in the official communiqué of yesterday.

The effective co-operation of our artillery was due in no small measure to the services of our aviators. In the misty weather that prevailed little could be seen by the latter from a height at which they were comparatively safe, and they did not hesitate to accept the greatest risks by descending to a height of only 800 ft. above the hostile batteries.

\* \* \*

The following passage relating to aircraft appears in the descriptive account which has been communicated by an Eye-witness present with General Headquarters, continuing and supplementing the narrative published on the 24th inst.

March 26th.

The lull on our front has continued during the last four

days, though the enemy's artillery has been somewhat more active. On Monday, the 22nd, besides other results recorded in the last summary, we succeeded in destroying one of the German anti-aircraft weapons which had been annoying our aviators.

\* \* \*

The following notice was officially issued on March 24th:—

The King has been graciously pleased to give orders for the following appointments to the Distinguished Service Order in recognition of the meritorious services of the undermentioned Officers during the war:—

#### TO BE COMPANIONS.

STAFF.—Major Bertie Drew Fisher (17th Lancers).

ROYAL FLYING CORPS.—Captain and Brevet Major (temporary Lieutenant-Colonel) Charles James Burke (Royal Irish Regiment).

Captain and Brevet Major John Maitland Salmond (Royal Lancaster Regiment).

Captain (temporary Major) Herbert Musgrave (Royal Engineers).

Lieutenant (temporary Captain) William Henry Charles Mansfield (Shropshire Light Infantry).

Lieutenant Hubert Dunsterville Harvey-Kelly (Royal Irish Regiment).

Lieutenant Gilbert William Mapplebeck (Liverpool Regiment).

[These appointments were announced some time ago.—Ed.]

\* \* \*

The Casualty List published on March 26th contained the following:—

#### EGYPT.

The following casualty is reported from Egypt:—

#### DIED.

Cockerell, Lieutenant S. P., Royal Flying Corps.

\* \* \*

The following appeared in the Casualty List published on March 27th:—

#### DIED AS THE RESULT OF AN ACCIDENT.

Rich, Captain C. S., Royal Field Artillery, attached Royal Flying Corps.

#### MISSING.

Davies, Second Lieutenant T. E. H., King's Royal Rifle Corps and Royal Flying Corps.

Humphreys, Lieutenant G. N., Royal Flying Corps.

\* \* \*

The following appeared in the Casualty List published on March 29th:—

#### MISSING.

Mapplebeck, Lieutenant G. W., King's (Liverpool Regiment) and Royal Flying Corps.

Warrand, Lieutenant A. St. J. N., the Black Watch and Royal Flying Corps.

#### INTERNEED IN HOLLAND.

Eastwood, Lieutenant G. H., Royal Flying Corps.

Joubert de la Ferté, Second Lieutenant J. C., Royal Flying Corps.

Fryer, Captain F. E., Royal Garrison Artillery and Royal Flying Corps.

#### INDIAN FORCES.

The following casualty among the Indian Forces is officially reported:—

#### OFFICER INTERNEED IN HOLLAND.

Veitch, Lieutenant D. M. V., 1st Lancers, attached Royal Flying Corps.

\* \* \*

Second Lieutenant Samuel Pepys Cockerell, Royal Flying Corps, whose death from acute hemorrhagic small-pox at Ismailia on the 20th inst. was reported from private sources last week, was educated at Eton and Trinity College, Cambridge, and distinguished himself as an athlete. According to the "Morning Post" he rowed in the Eton boat which won the Ladies' Plate at Henley in 1898. In the same year he went up to Cambridge, and in the following spring was chosen as ninth man for the University crew, but preferred to run third

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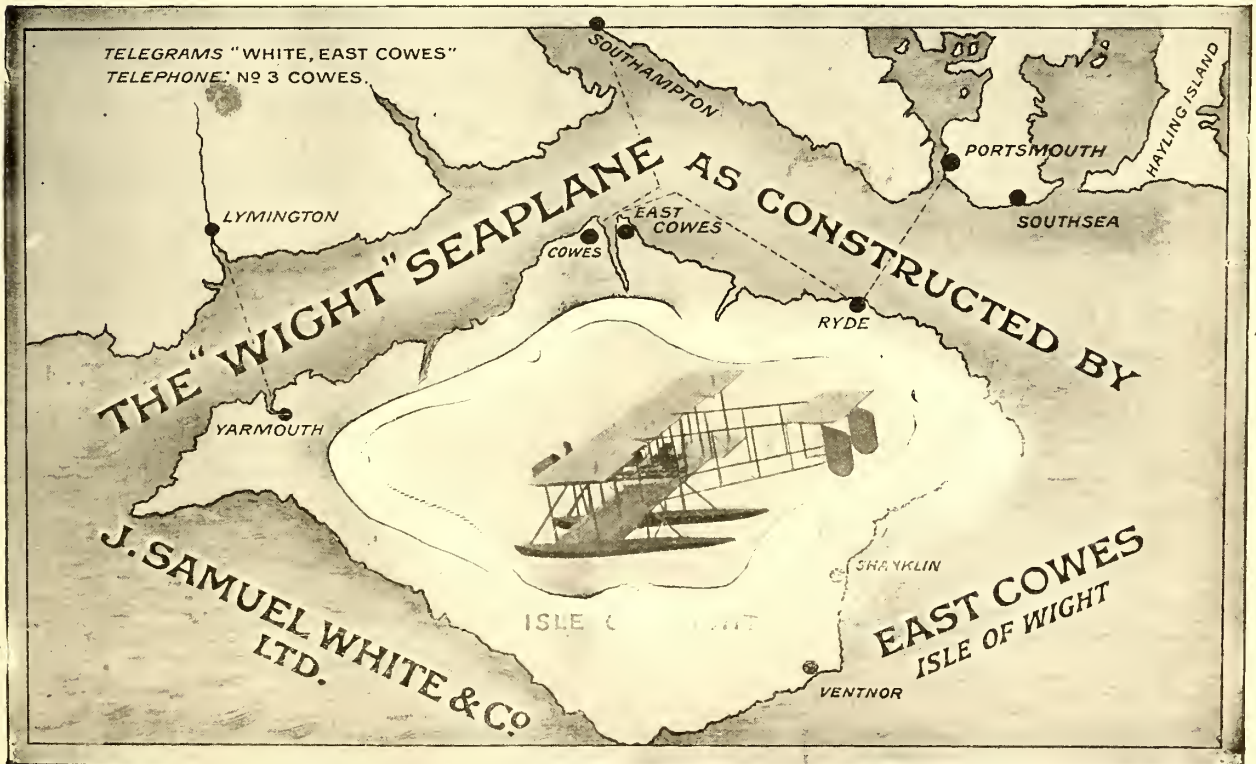
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string for the mile at Queen's Club. In the 'Varsity Boat Race of 1900 he rowed bow in the Cambridge crew, known as the "Classic Crew," which won the race in record time—18 min. 45 sec. He entered the Foreign Office in 1902, and was there for eight years. During that time he was attached for two years to his Majesty's Embassy at Madrid as Commercial Attaché to Spain and Portugal, and did valuable work, which was so highly considered in commercial circles that he resigned his post in the Foreign Office in 1910 in order to follow his natural bent in business in the City. From the time when aviation was in its infancy he took the keenest interest in it, devoting all his spare time to it, and taking his pilot's certificate, as stated last week, in 1911. On November 4th he left England to join the Expeditionary Force in Egypt, where he was doing duty as pilot and observer over the Sinai desert up to the time of his death.

\* \* \*

The official notification of the death of Major Christopher Styles Rich was contained in the list issued on March 26th. He was doing duty with the Royal Flying Corps near Bailleul when he met with an aeroplane accident and sustained injuries which ended fatally on the 22nd in hospital. Major Rich joined the Royal Artillery during the Boer War. He was posted to the 15th Field Battery, serving in it as second lieutenant, and then as lieutenant, under Colonel C. N. Simpson, at Waterford, Fethard, and elsewhere. In 1905 he went to West Africa and served in the artillery section of the Gold Coast Regiment in the frontier force under Colonel C. Carter, Royal Scots, at Kumasi.

He became a local captain in the regiment in 1909, being the senior artillery officer serving, and later joined the 36th Battery at Newcastle-upon-Tyne. On getting his captaincy he was posted to the 29th Field Battery in Ireland. Later he was adjutant under Colonel R. F. Fox (who was given a C.B. recently), with the 38th Brigade R.F.A., at Fermoy, and was under orders for Kildare when mobilised. Major Rich did much excellent observation work in co-operation with artillery during the operations.

\* \* \*

It is reported on somewhat indirect evidence that the late Captain Cholmondeley was killed by a bomb exploding when it was being placed in the biplane which he was about to fly. It is desirable to have further confirmation before setting this statement down as an absolute fact, for if it is true it is peculiar that the Casualty List should have given him as being killed, and not as accidentally killed. Also, his death accounts for one of the Flying Corps victims claimed by the German official communiqué.

If it is true that the accident occurred through the bomb exploding, it is quite time that some more certain method was adopted to make the bombs used by our aviators safe until they are actually dropped out of the machine, as there have already been several fatal accidents caused through bombs exploding when they should not have done. It is true, of course, that human life is cheaper in war time than in any other, but when one considers the question of war scientifically it should be obvious that the life of a soldier is more valuable in war time than in peace, until the precise moment when it is necessary for it to be given in the cause for which he is fighting.

\* \* \*

2nd Lieut. G. H. Eastwood is an officer of the Special Reserve, appointed to the R.F.C. on September 10th, 1914, and as Flying Officer on December 22nd, 1914.

Lieut. A. St. J. Warrand is an officer of the Black Watch (Royal Highlanders), to which regiment he was appointed on August 6th, 1910. He was posted to the R.F.C. on October 21st, 1914, and for some time acted as Adjutant at Brooklands.

2nd Lieut. J. C. Joubert de la Ferté was appointed to the R.F.C. Special Reserve on November 8th, 1913, and as Flying Officer on October 19th, 1914.

Capt. F. E. Fryer does not appear in the Army List as belonging to the R.F.C., and was therefore probably a very recent appointment, or was attached as observer. He obtained his captaincy in the R.G.A. on October 30th, 1914.

Lieut. Mapplebeck was an officer in the Special Reserve of

the King's (Liverpool) Regiment, who was appointed to the R.F.C. as Flying Officer on December 17th, 1913. He was awarded the D.S.O., and a commission in a Regular Battalion of the King's on October 27th, 1914, for gallantry in the early part of the war, in which he was severely wounded.

2nd Lieut. T. E. H. Davies was appointed to the King's Royal Rifle Corps on November 11th, 1914, and does not appear in the Army List as belonging to the R.F.C.

Lieut. G. N. Humphreys was appointed to the R.F.C. Special Reserve on February 26th, 1914, and as Flying Officer on September 16th, 1914. He will be remembered as flying the Muller-Caudron biplane at Brooklands. He had already had some extraordinary escapes, on one occasion a shell bursting under his Farman and perforating it with about 200 holes.

\* \* \*

No dates are given for the disappearance of the four officers noted as missing in the Casualty Lists. It may be assumed, however, that Lieut. Humphreys and his passenger were the two aviators indicated in the German official communiqué of March 21st, so that the official report was even more delayed than was presaged in the last issue of this paper.

The capture of Lieut. Mapplebeck and his passenger is not noted in any German communiqué, but on the other hand there is no German claim to indicate that a British aeroplane was shot down on any date which might coincide with their disappearance, so it is possible that the communiqué of the 21st referred to them also, owing to confusion between the two occurrences. At any rate, one may still hope that they have only been captured.

On the other hand, if Captain Cholmondeley was killed by his own bombs, as reported, the two machines noted in the German communiqué of the 13th, as being shot down about March 11th and 12th, may refer to the machine in which Lieuts. Chidson and Sanders were brought down, and that of Lieut. Humphreys, so that the one of the 21st may refer to Lieut. Mapplebeck.

Everyone will sympathise with all these young officers in being thus condemned to inaction for the rest of the war, especially the junior ones who have only been on active service a few weeks.

\* \* \*

On the 24th the King, at Buckingham Palace, conferred decorations on several British officers. Among them Lieutenant Harvey-Kelley, Royal Irish Regiment and Royal Flying Corps, received the D.S.O., the other R.F.C. officers mentioned being on active service.

\* \* \*

An R.A.M.C. officer, in a vivid description of the R.A.M.C.'s work at Neuve Chapelle, relates how, when his section was in a very tight corner, "at last, owing to the unspeakable daring of an aviator (for it was misty, and observation, except at a low elevation, was impossible) our guns, having got the range, opened fire, and there was a terrific half-hour from our heavy artillery; the horse gunners galloped like madmen down the road and got into position, and now there was comparative quiet."

AT SEA.

The steamship "Elfland," which was attacked a week ago by German aviators six miles west by north of the North Hinder Lightship while flying the flags and pennants of the Belgian Relief Commission, has arrived at Dartmouth from Rotterdam. Capt. H. Smith stated on the 24th that after three bombs had been dropped close to his vessel a British torpedo-boat fired at the aeroplane, but did not hit it. The aeroplane then rose higher, circled around and dropped another bomb, which exploded on the port side of the steamer. The aeroplane ceased the attack, and went off towards Ostend.

\* \* \*

The Imperial Merchant Service Guild have received information of a German aeroplane attack at sea on the steamship "Pandion" from the master, Mr. J. A. Smith, and the second officer, Mr. J. F. Adam.

It seems that about half past eleven on Sunday morning (March 21st), while on passage from Rotterdam to Manchester and midway between the North Hinder light vessel and the

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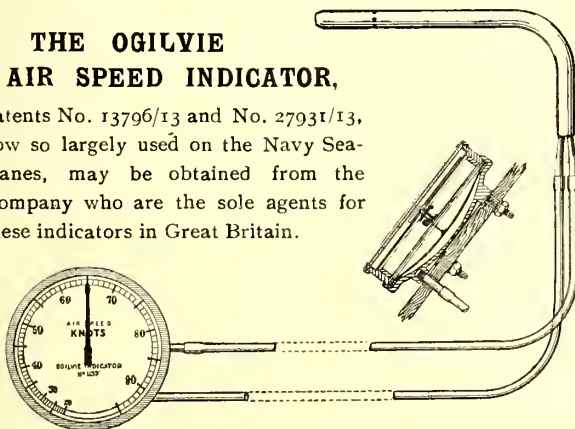
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Galloper light vessel, the crew were busily engaged in examining a large spar floating vertically in the sea when a German aeroplane approached from the west at about 500 ft. When overhead it dropped a bomb which fell into the sea and exploded about 10 ft. off the steamer's starboard quarter. The aeroplane circled over the steamer again, when 2 distress signals were fired at it. This evidently surprised the enemy, for he cleared off to the east.

Some 50 minutes later, however, he returned at an increased height—800 to 1,000 ft. Knowing that he was well outside the range of the ship's rockets, he dropped 5 bombs, all of which fell in the sea and exploded about 15 ft. off and 2 points abaft the steamer's port beam. About 20 seconds later a seventh bomb was dropped. Meanwhile 4 more distress signals were fired at him, and the captain used his rifle.

During the whole time the ship was constantly manoeuvred from side to side, and it is stated that the last bomb thrown would most certainly have hit her had it not been that she was on full swing of starboard helm at the time and the bomb fell just clear of the starboard side, about 2 points before the beam. Having evidently exhausted his supply of bombs the enemy cleared off to the eastward.

[The skipper is to be highly commended for a thoroughly sporting effort. "Dodging" bombs is foolish because a ship is just as likely to dodge into them as away from them, but signal rockets, though insufficient in power, are likely to be disconcerting to an aviator flying low down, and one hopes the skipper made good shooting with his rifle. Every ship in British waters is now a war-ship, so one would like to hear that the Admiralty is prepared to supply a light gun and a gunner to approved ship-masters. There seem to be possibilities here for the Anti-Aircraft Corps.—Ed.]

\* \* \*

Another British trading vessel has escaped from a determined bomb attack by an enemy aviator in the North Sea, namely, the "Teal," a small screw steamer owned by the General Steam Navigation Company, which arrived in London from Holland on March 24th. The attack took place at about 7 a.m. on the 23rd, when the "Teal" was some 30 miles off the Dutch coast. There were two men in the aeroplane, which was estimated by the crew to be flying at about 200 ft., though as they missed the boat every time they were probably nearer 1,000 ft.

The attack lasted about three-quarters of an hour, and four bombs were dropped. The vessel was also fired at apparently by a machine gun, and a number of steel darts were dropped from the Taube. None of the projectiles had any effect, though members of the crew stated that the vessel was struck by several bullets. The only visible evidence of the attack which remained was a hole in the deck caused by a flêchette which the skipper keeps as a memento of the experience. Members of the crew state that a vessel, ostensibly a trawler, with an exceptionally large crew, was the base from which the Taube operated, and that signalling took place between the vessel and the aviators.

\* \* \*

The crew of the Bergen steamer "Diana," which arrived in Shields harbour on March 25th, reports an attack upon them during their voyage from Calais. They state that, hearing a whirring sound, they took refuge below, not knowing what it meant, a step which proved to be the most fortunate thing they could have done, for they afterwards discovered that streams of darts were being dropped from an aeroplane, which were calculated to inflict serious injuries wherever they struck.

They found next morning the deck strewn with more than 500 of these missiles, most of which were embedded in the wood-work.

\* \* \*

The "Daily Telegraph" reports as follows:—

"On arrival at Swansea at the week-end the Dutch steamer, 'Rijnberger,' reported having picked up a German war balloon in the North Sea, half-way across from Rotterdam to Swansea."—[War Geography Exam. Question A.:—Indicate a point in the North Sea, half-way between Rotterdam and Swansea. Give your reasons, and draw a map.—Ed.] "The

balloon is now in the charge of the Customs authorities. It is red, capable, the crew think, of carrying a man, is numbered sixty-eight, and bears the mark of the Field Artillery School, Berlin. It had probably been blown away into the sea, but it is not thought there was any loss of life in connection with the incident. The balloon, according to the steamer's crew, would be about six feet to eight feet when extended."—[Another discovery of German science. Anti-gravity gas, which enables a balloon 8 ft. in diameter to lift a man.—Ed.]

## FRANCE.

The afternoon communiqué of March 23rd says:—

The enemy bombarded Reims. A German aviator dropping bombs on the town caused three victims among the civil population.

\* \* \*

An official note issued in Paris on March 26th says: Six of our aviators bombarded the airship sheds of Frescati and the station of Metz. They dropped a dozen bombs, which caused a panic. Although exposed to a violent cannonade they all returned safely. We also bombarded the barracks to the east of Strassburg.

\* \* \*

"L'Information" states that a Taube flew over Mon-Desert at Nancy on March 22nd. Attacked by artillery, it fell, with one wing broken, near Malzeville. It has also been ascertained that one of the Taubes shot at on Saturday, 20th, was brought down in the German lines.

\* \* \*

It is reported that on the morning of March 26th a German aeroplane flew over Calais at a great height, travelling from north-west to south-east, and dropped several bombs. The first, aimed at the Citadel, fell on the glacis. Others fell on the railway near the Central Station, and others in the centre of the town, but little damage was done. The aeroplane, which was shelled throughout its flight by the batteries on the sea front and finally driven off, was apparently the same that afterwards dropped six bombs on Dunkirk.

\* \* \*

Reuter's Paris agent reported on March 27th that a Taube flew over Estaire and dropped two bombs, which did not burst. Two children playing near rushed to pick them up, with the result that one bomb exploded and the children were killed.

A Taube flew over Dunkirk the same morning, but was driven off by artillery. Six bombs were dropped but no damage was done.

A German aeroplane also visited Calais and threw one bomb, which injured no one and caused no damage.

\* \* \*

It is reported that on March 27th a Zeppelin, escorted by seven German aeroplanes, approached Basle, coming from Freiburg-im-Brisgau. A squadron of seven French aeroplanes gave battle near the French trenches, and while the opposing squadrons were fighting with rifles they were assailed from the earth by artillery and infantry. The Zeppelin made haste to disappear behind the Vosges.

In the course of the fight a German captive balloon was destroyed by French gunners.

\* \* \*

The "Times" correspondent in Paris reported on March 29th that a Taube flew over Cassel at 8 a.m. and dropped six bombs. The tramway wire was slightly damaged. The machine then passed over Hazebrouck and Bailleul.

\* \* \*

The special correspondent of the "Express" in Northern France told the following stories on March 27th:—

"A Taube was seen approaching Armentières, over which she circled once and dropped several bombs into ruins already beyond damage. The aviator then flew in the direction of a large troop of moving cavalry near —. Before reaching them she glided down to get closer when our well-hidden aeroplane guns sent half a dozen small skyrocket 3-pounder howitzer shells, which burst above, below, and in the target itself. When the human and other remnants reached the earth they were far apart.

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\* \* \*

The Paris correspondent of the "Daily Chronicle" under date March 20th states:—After remaining undiscovered for four days where it had fallen, a huge explosive bomb, dropped by a Zeppelin at Courbevoie in Sunday morning's raid on Paris, was yesterday unearthed, rendered innocuous, and removed to the Municipal Laboratory.

The discovery of the bomb was made in a somewhat strange manner. An inhabitant noticed a rather curious inequality about a piece of ground, and probing with a stick discovered the bomb.

It proved to be the largest unexploded bomb among the Paris relics of the two Zeppelin raids upon the city. It weighed over 170 pounds, and had a diameter of about 14 in.

\* \* \*

The Paris correspondent of the "Morning Post" reports:—"Paris, March 23rd.

"No criticism of the German Emperor appeals so strongly to the French public as that, like a bad comedian, he always spoils his entrance onto the stage. Paris to-day is hugely indignant with the Germans because of the false alarm of Zeppelins last night. When the Zeppelins visited Paris on Monday morning the civilians were caught napping, and only a small percentage saw the bombs. Last night the fire-engines patrolled the streets with bugles blowing the alarm at nine o'clock in the evening. The lights of the city had scarcely all been extinguished when it was decided that the alarm was unfounded.

"A second alarm was subsequently given, but this proved as vain as the first, and finally everyone went home thoroughly disgusted with the Germans for defrauding them of a spectacle for which they had deserted their last coffees at restaurants and the seats for which they had paid in the cinema halls. All to-day Paris has been patrolled by aeroplanes."

\* \* \*

It is reported on excellent evidence that the airship raid on Paris reported last week was carried out by a Zeppelin and a Parseval, and not by two Zeppelins.

It is also stated that the "Escadrille de Paris" made no attempt to attack the airships, and that no aeroplanes left the ground till the airships had been gone for over an hour. On this subject more may be heard when fuller particulars are available.

\* \* \*

A well-known French aviator who has been flying the new Nieuport biplane states that it is the best French machine he has ever flown. The speed is, if anything, in excess of our own fastest scouts, and it lands slower than a Blériot.

\* \* \*

A friend in Paris states that the Sergeant-aviateur Louis Noel has been given the Russian Order of St. George. In recognition of the valour of the French troops the Czar sent to France a number of the crosses of St. George to be given to sous-officiers for services rendered in the field of battle. Sergeant Noel was chosen to represent the Aviation Service of the 6th Army. The cross is a simple silver Maltese cross with a black and yellow ribbon.

It is further stated that Sergeant Noel is recommended for "adjutant"—or quartermaster-sergeant—as a preliminary to being promoted to a commission.

#### GERMANY.

The German official report of March 23rd says:—

Hostile aviators again dropped bombs on Ostend, but no military damage was done, though several Belgians were killed or wounded.

North-west of Verdun a French aviator was brought down.

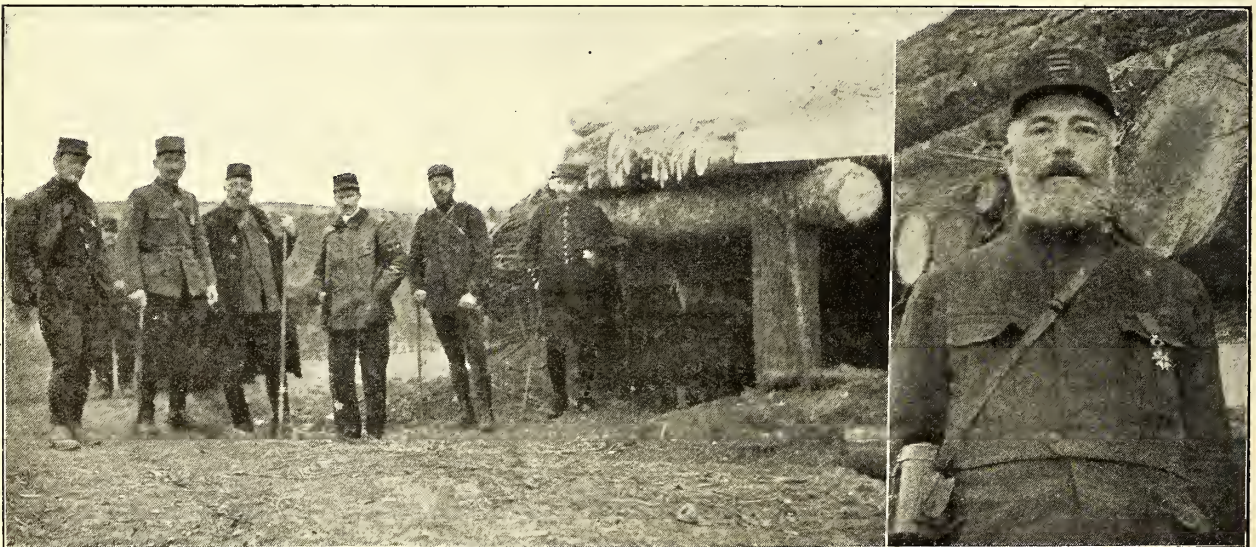
A French aeroplane, with two non-commissioned officers, was forced to descend near Freiburg, and both were taken prisoners.

\* \* \*

A telegram from Romanshorn to the "Politiken" of Copenhagen, dated March 25th, states that the aviators of the Allies are showing considerable activity in the district.

On one occasion, when an aircraft was heard, a ship having on board a searchlight made careful observations in the neighbourhood of the Bodensee (Lake Constance), but failed to find the hostile aircraft, the motors of which were heard for nearly an hour. The sound eventually died away in an easterly direction.

The Germans believe that an air raid on Friedrichshafen was intended or being prepared, and it is supposed that the aviators came from Alsace, in view of the fact that all lights were suddenly extinguished along the whole of the German shore.



The Gun Emplacement, the Officers of the Battery, and the Commandant thereof, with whom the Sergeant-Aviator Noël has been co-operating in controlling artillery fire with such good results that he has been selected for the Cross of St. George and further promotion.



The Berlin correspondent of the "National Tidende" states that the aerial raid on Strasburg on March 26th was effected not by French but by British aviators. The aeroplane was visible over Strasburg for nearly half an hour, and dropped five bombs.

It is further admitted that during the night of Thursday-Friday aeroplanes destroyed the German sheds at Berchem, near Brussels.

#### RUSSIA.

The following communiqué was issued by General Headquarters on March 25th:—

On the Dunajetz we hit an enemy aeroplane, but did not succeed in capturing it, as it fell among the enemy's lines.

The following official note was issued at Petrograd on March 27th:—

At Ossowiec the Germans made several attempts to send up a captive balloon, but our artillery hit it at once.

It was reported from Petrograd on March 25th that an officer who took part in the last sortie made by the Przemysl garrison says that General Kusmahek and his staff had decided to attempt to escape by aeroplane, but that a high wind prevented them from doing so.

[The story is a Reuter "special," but does not seem sufficiently original to merit the adjective. Any moderately active imagination could have thought of it, especially after the yarn of the Kaiser's two sons escaping from an awkward corner in Poland by aeroplane.—Ed.]

The following official bulletin was published at Petrograd on March 29th:—

The Black Sea fleet yesterday bombarded the outside forts and batteries of the Bosphorus on both sides of the Straits. According to observations made from the ships and seaplanes, the shells fell with exactitude. The Russian aviators flying above the Bosphorus batteries carried out reconnaissances and dropped bombs with success. A heavy artillery fire was poured onto the aviators, but without success.

[Russia had, some time ago, a quantity of Curtiss boats near Sevastopol.—Ed.]

#### BELGIUM.

According to the Sluis correspondent of the "Telegraaf" (Amsterdam, March 25th), the Allied aviators are developing great activity in Flanders. On the 24th several flew over the aviation ground at Gits, near Roulers, dropping bombs, wounding soldiers, and damaging sheds. One bomb exploded among a group of soldiers at St. Andree, near Bruges. The number of killed and wounded is unknown. An aeroplane reconnoitring over Zeebrugge was heavily shelled from the coast batteries.

The "Maasbode" learns that in the air raid at Hoboken last week a new submarine was split into two pieces and another was seriously damaged, while the number of workmen injured was more than 300.

The Bergenop Zoom correspondent of the "Telegraaf" states that an English aviator has been shot down near West Capelle.

The "Echo de Paris" relates that on the trucks in which the Germans conveyed away the fragments of the Zeppelin destroyed near Tirmont early in March was chalked in enormous letters "Debris of a dirigible captured from the French on the Yser."

The following tall story was sent by the "Evening News" correspondent from Rotterdam on Sunday:—

"My Antwerp correspondent reports that the success of the Allied air raid last Wednesday was due to the clever ruse of an Englishman who flew a German Taube machine. Two aeroplanes first served as a target for the German guns, then a Taube appeared on the scene, apparently to attempt an attack on the other two, which, however, escaped.

"The Taube landed on the sands on the left bank of the Scheldt, just opposite the naval works at Hoboken, where it was cheered by German soldiers who had seen the chase. Suddenly the Taube rose again and flew over a shed at Cockerill's shipyard and dropped several bombs on two submarines, one of which was ready to be launched and the other nearing completion. The pilot went off suddenly, and rising, waved the British flag. Some Germans were killed or wounded." [Hardly likely one of our pilots would fly a Taube, though we might use the modern German biplanes.—Ed.]

#### HOLLAND.

The "Morning Post" correspondent at Amsterdam reported on March 27th:—

"This morning a Zeppelin airship was signalled north of the Island of Schiermonnikoog, travelling westwards.

"News has reached Amsterdam that during the night, on Thursday or Friday, a Zeppelin shed at Berchem was destroyed by bombs dropped by an aeroplane.

"According to a report received by the 'Nieuwe Rotterdamsche Courant,' the German airship 'L7' was seen this morning north of the coast of the Province of Groningen, voyaging in an easterly direction."

It was reported by the "Morning Post" correspondent at Amsterdam on March 29th that two Zeppelin airships passed north of the Island of Schiermonnikoog this afternoon, going in a westerly direction. The same correspondent states that the Zeppelin shed near Berchem, respecting which he telegraphed on the previous day, was destroyed by the well-known Belgian airman Jan Olieslagers.

#### AUSTRIA.

In an account of the last days of Przemysl the correspondent of the "Bourse Gazette" (Petrograd) writes: On one occasion an Austrian aviator, in leaving the fortress, was brought down by our batteries and taken prisoner, but no documents were found on his person. Apparently he was entrusted with a verbal message to Vienna. On another occasion our patrols detected a large transport trying to reach one of the forts at dusk. Promptly our aviators began to drop bombs, and all the wagons laden with supplies were destroyed.

The besieged made considerable use of a pigeon post for the maintenance of communication with the outside world.

#### TURKEY.

The "Daily Chronicle" representative at Tenedos reports:—"A German aeroplane coming from the direction of the Gallipoli peninsula flew over Tenedos at eight o'clock this morning. Crossing the island, it circled round high above the Anglo-French fleet lying anchored on the western side of the island, after which the aviator returned in the direction whence he came. The islanders were greatly excited at seeing an aeroplane for the first time."

The "Tribuna" of Rome states that at dawn on March 20th the aviators of the Allies succeeded in making above the recently bombarded forts reconnaissances which showed that the operations have been extraordinarily efficacious.

#### MONTENEGRO.

A telegram from Cetinje states that on March 24th three Austrian aeroplanes threw 13 bombs on Antivari, six on Virpazar, and two on Niegushi, all without effect.

Sir J. Roper Parkinton, Consul-General for Montenegro, has received the following official telegram from Cetinje, which probably refers to the same events:—

"Three Austrian aeroplanes passed over Antivari at six o'clock on the morning of the 23rd inst., throwing 16 bombs, one of which fell on the Government tobacco warehouse, destroying the roof. Virbazar was also attacked with bombs, damaging the railway station. A further attack was made on the Montenegrin positions at Lovtchen, both by bombs and with wooden arrows with steel points."



**EGYPT.**

The following statement was officially issued at Cairo on March 23rd:—

On the 22nd inst., at dawn, one of our patrols discovered a party of the enemy near El Kubri post, opposite Suez. Shots were exchanged; aeroplanes estimated the number at about 1,000, composed of infantry, artillery, and a few cavalry. The guns at El Kubri opened fire and inflicted casualties, whereupon enemy retired and formed camp eight miles east of Canal.

**CENTRAL AND EAST AFRICA.**

Referring to the War in Africa, in a very able leading article, the "Morning Post" says:—

"What seems certain, even without official information, is that while the Germans in Africa were ready our Colonies were inadequately provided with soldiers, arms, and military plans. Even in the Cameroons the Germans had at least two aeroplanes, and we do not suppose that there was a single military aeroplane in any British African Colony at the beginning of the war. The Germans, moreover, had everywhere an abundant supply of machine-guns and other arms. And the net result is that, despite our command of the sea, our vastly superior advantages, and the bravery and patriotism of our Colonists, we have made so far but a poor show in Africa."

Before the war THE AEROPLANE several times drew attention to the German aircraft in South-West Africa, which were taken out there by Bruno Büchner, a very useful pilot, as has been since proved. When war broke out the only British-owned aeroplanes in Africa were in Mr. John Weston's museum in the Orange River Colony, and two Curtiss boats at Durban, flown by Mr. Cutler. One was smashed, and the other was, apparently, captured when scouting for the "Koenigsberg." Since then, of course, a number have been sent to Egypt and to South Africa, but apparently none exist in West, Central, or East Africa. In West Africa, presumably, the need is not great, as, with French assistance, we seem to have the situation well in hand.

In Central and East Africa affairs appear to be very different. German East Africa is well supplied, magnificently organised, and the natives are splendidly trained with German thoroughness, instead of being demoralised by missionary tinkering. It is under such conditions that aeroplanes would be of the greatest use, for, so far as can be gathered, no German aeroplanes are in that district, so our people would have an immense advantage. If aeroplanes are to be sent out it will be well to remember that simplicity of repair and maintenance, and great lifting power, are more to be desired than speed, for they will have to get off and land on bad ground, and will have to spend long periods in the air without travelling great distances.

**SOUTH AFRICA.**

The "Cape Times" weekly quotes a local paper as follows:—"An aeroplane passed over Burghersdorp about 11 o'clock on Wednesday (March 10th?), travelling south at a very high altitude and at tremendous speed. Another, or perhaps the same one, was seen about 1.30 the same day."

\* \* \*

The "Cape Times" states that:—

"The following is officially communicated to the Press: From an article published in a Winduk newspaper it is evident that our artillery-fire on the German aeroplanes has been very effective, even at 6,000 feet. The article states that the German pilots declare that our shells burst very close to them and that one of the aeroplanes shows marks of 150 shrapnel bullets."

\* \* \*

The "African World" (London weekly) of March 27th reports:—Garub, March 24th.—An enemy aeroplane made an attack this morning. It approached by way of the boreholes, where were, no doubt, the aviator's objective, but was unable to get in any effective shots owing to the well-directed fire of our heavy guns.

The "Reuter" correspondent at Garub (East of Lüderitz-bucht) reported on March 27th that an enemy aeroplane again attacked our camp. It approached at sunrise, flying extremely high, and after a wide detour northwards entered from the rear. The aviator manœuvred as near as possible to our guns and dropped a couple of shells and a few dart bombs or hand grenades. Only one native was slightly injured.

**JAPAN.**

The "World," Vancouver, Canada, reports:—Tokio, March 6th.—The pilot and two officers were drowned when a navy seaplane fell to-day at Yokosua. The seaplane and crew were attached to the naval station at this place.

**U. S. A.**

It is reported that recently two American records and one world's record were broken by Lieutenant Byron L. Jones, of the United States Army Aviation Corps.

Flying in a Burgess-Loening military tractor biplane, with a Curtiss (Curtiss ?) motor, Lieut. Jones is said to have made an endurance record of 7 hrs. 3 mins. with three passengers; the American altitude record of 6,000 feet with three passengers, and also beaten the American record for endurance and speed for two passengers, carrying a useful load of 900 pounds. A report of the performance has been sent to the Aero Club of America.

\* \* \*

It is said that the fatal accident to Lincoln Beachy at the Panama Exhibition, when he fell into San Francisco Bay, was caused through the wings of his machine crumpling up at the moment of flattening out from a vertical dive. Apparently, he had been endeavouring to give his usual looping performance on a German "Taube" monoplane (of all machines), and finished up with a tourbillon, à la Chanteloup, but the strain on the machine was too great, and it collapsed. The accident is rather a surprising one, because genuine German monoplanes usually stand up to any amount of diving. Possibly this was merely an American imitation.

\* \* \*

Apparently, the British and the American press are equally gullible. Mr. Thomas R. MacMechan—of whom mention has already been made in this section—appears to be devoting himself to pulling the leg of the press of both countries, for most of the British "halfpennies" have reprinted a yarn from the "New York Sun" describing some wonderful "aerial torpedo boats" which Mr. MacMechan claims to be building for the British Government on behalf of a firm of which, it is stated in a letter from America, Earl Grey is chairman.

These "destroyers" are said to be only 230 feet long, yet they are supposed to carry a 90-h.p. engine fore'ard and a 125-h.p. engine aft, and to do something over 60 miles an hour. They are to have wooden frames, copper riveted, and to carry a gun throwing a shell point blank to over 500 yards. One trembles to think of the effects of firing a real gun from such a structure.

Despite their small size they are alleged to have 14 separate gas compartments.

The following paragraph is produced in its entirety, as any transcription would spoil it:—

"A certain button to regulate the density of the gas will send hot air from the exhaust chamber up under a certain balloonet, or another will send cold air. The sparks are strained out of the exhaust, and each engine is enclosed, with its engineer, in an asbestos-lined, fire-tight compartment."

The account concludes with the following statement:—"Mr. Wilbur R. Kimball, formerly secretary of the Aeronautical Society, is one of the engineers of the work, and is now in New York looking for qualified men for the crew to accompany him back to England."

It occurs to one that, in view of the state of American aeronautics, Mr. Kimball might be better employed in searching for the proverbial needle in the hay-stack, if by "qualified men" one is to understand men with airship experience. And, anyhow, since when have we started recruiting in America?

**CANADA.**

The correspondent of "La Presse" of Montreal at Quebec reported on March 5th that M. J. M. Landry, the well-known French-Canadian aviator, has received a letter from Colonel Stanton, Secretary to the Governor-General, seeking his aid in the formation of an aviation corps. M. Landry has replied in the affirmative and is now actually in touch with the promotion of the project.

\* \* \*

From the "Montreal Daily Star":—Toronto, March 12th.—The British War Office has asked the military authorities in Canada to forward at once the names of any British subjects who are qualified aviators or airship mechanics. (Here are given the rates of pay.) Competent men will probably be given positions in the Imperial Service or Royal Flying Corps.

\* \* \*

From the "Daily News," Prince Rupert, B.C.:—Toronto, February 25th.—Discussing the possibility of an airship raid on Canada from the U. S., Mr. J. A. MacCurdy, the Canadian aviator, said to the "Daily News" correspondent: "It is possible, but not at all probable, for unless the machines were built secretly for a raid it would not be possible to get four high-powered machines in any town in the States. Apart from machines at the factories and those held by the military authorities, there are only about one dozen machines in the States which could make the journey, and these are flying-boats. It is a comparatively easy matter for a person to be deceived as to the sound of the engines," added Mr. MacCurdy. "Railway engines in blowing off steam often make a purring sound which is identical with the noise made by aeroplanes."

Mr. MacCurdy further explained that nearly all the aeroplanes in the States are small ones, used solely for exhibition purposes, and these had only a short radius and could fly only about 200 ft. high. For a long flight much larger engines were needed and the ability to carry a large supply of petrol. Another and an important reason why the story looked wrong was that aeroplanes practically never fly by night. This is because of the difficulty of landing.

**AUSTRALIA.**

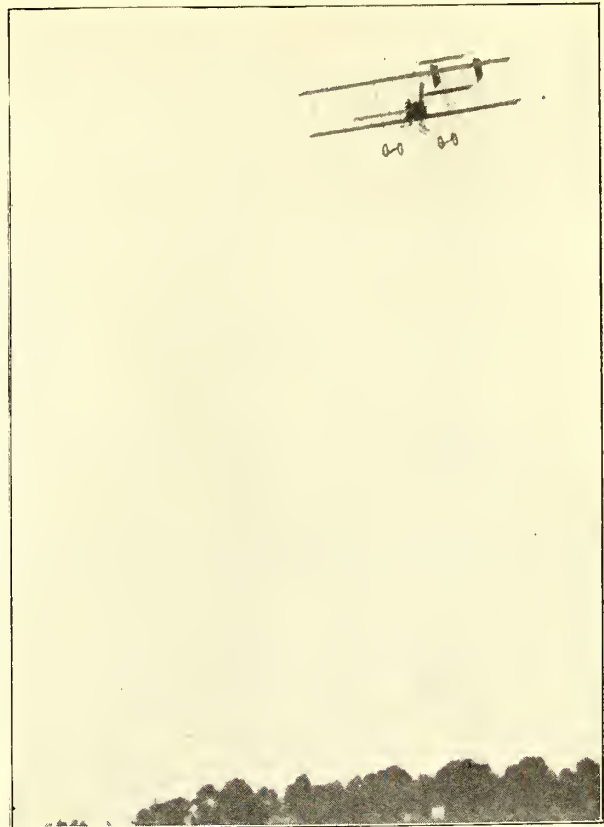
The following is taken from the Melbourne "Argus" of February 8th:—

"The first instructional course to be conducted at the Military Aviation School at Point Cook will be carried through on February 8th, and it will be restricted to permanent officers of the military forces only. In this instance staff and artillery officers will participate in the instruction, which will consist of a course of aerial military observation. There will be two machines engaged, and each of the eight officers who are taking the course will make a flight in company with a pilot. The first course of instruction, which includes the course of qualification as aviation pilots, will be commenced in March."

\* \* \*

From the "Argus," Wednesday, February 17th:—Military Aviation.—Important Announcement.—The Commonwealth Defence Department has for some time past had under consideration the construction of military aeroplanes at their Point Cook aviation depot. Already a biplane for school purposes has been erected, but it has been thought that a large number of machines for use by the increasing number of military aviators in the Commonwealth should be built by the Defence Department's staff of mechanics.

The Minister for Defence (Senator Pierce) announced yesterday afternoon that the department had decided to proceed with the building of military aeroplanes. The only difficulty which confronted the department was the fact that the Renault engines were required for the flying-machines. Up to the present the manufacture of aviation engines had not been undertaken in the Commonwealth. He had no doubt, however, that a number of engineering firms in Australia would be only too pleased to take up this branch of work. The Defence Department has a number of Renaults at the present time, and by communicating with the Secretary of the Defence Department particulars with regard to their construction may be obtained.



**Not a Relic of the Past—but an Australian Officer (Captain White) descending at Point Cook a few months ago.—Advance Australia!**

From the "Argus," February 10th:—

"Sydney, Tuesday.—M. Marduel, the French airman, met with an accident while flying in Centennial Park to-day. About 4 o'clock he attempted a flight with a passenger named Hardt. The machine rose to a height of about 40 ft. and then side-slipped and crashed into a large fig-tree. The branches of the tree on the side of the collision were stripped. They, however, broke the fall, and the machine fell to the ground. Marduel and the passenger escaped uninjured. The machine, a Caudron biplane, was badly smashed."

\* \* \*

**NEW ZEALAND.**

The "Auckland Weekly News" says that Mr. Scotland, "the New Zealand aviator," is shortly returning to England to enter the Royal Flying Corps.

**Hendon and the Public.**

Many enthusiastic followers of aviation will be glad to hear that the Hendon Aerodrome will be open to the public as usual during the Spring and Summer. Special exhibition flights will be given by the Grahame-White School Pilots on Thursdays, Saturdays, and Sundays as before the war, and the season will commence this week with special flights on Good Friday, Saturday, Sunday and Easter Monday. Passengers will be carried.

Soldiers and sailors in uniform will be admitted free on all occasions.

A "Benefit Meeting" for the Flying Services Fund is being considered as a possible fixture for the Summer.

One gathers that there is no intention to start racing till after the war, and it is as well that the aerodrome should be open to the public, merely because of the educative value of properly conducted exhibitions of flying. Many an officer of the Flying Services has first been infected with a desire to fly by being a spectator at an exhibition of flying.



## Aero-motors: In Kind and Construction.—(Continued)

BY GEOFFREY DE HOLDEN-STONE.

### Valve Gear Adjustment.

No mere description of the parts of a Gnome motor nor their relation, nor even the way they go together and the general working scheme, is of the slightest practical use without the most careful study of all that has to be done before the motor can be made to run at all. Naturally then, in the process of assembly, adjustment is the main thing. This begins with the regulation of the exhaust-valve gear; it being understood that—the motor being of the four-stroke cycle—the various phases occur in each cylinder in the order 1, 3, 5, 7, 2, 4, 6; or in the nine-cylinder models, in the order 1, 3, 5, 7, 9, 2, 4, 6, 8.

First of all, the dead-point must be obtained in No. 1, which must therefore be brought directly vertical to the crank, so that piston No. 1 is at the point of full in-stroke. Then, standing in front of the motor turn it slightly to the left—counter clockwise—so that cylinder No. 1 may still be upwards, but not uppermost: that is to say, in the position of completed exhaust about five degrees beyond dead-point. This is best ascertained with an ordinary sector-compass (with the degrees marked on the sector) by laying one arm in line with the crank, and the other, with the cylinder axis. Then, with the right hand, rotate the little distributor-gear sleeve from right to left, so as to bring cam No. 1 into contact with the roller of its tappet-lift just to enable the valve-rocker to touch the valve-stem without actually depressing the valve itself. This should bring opposite teeth of the free distributing or cam-sleeve gear and the fixed gear on the crank-shaft into line, and in line with the cylinder axis; and to ensure the truth of this position, the motor should be given just the slightest rock one way or the other.

### The Lock-Up.

Now take the front plate—with the beak-shaft if it happens to be attached thereto—and open the little dust-cap which covers two small holes in the plate behind the planetary gears. Turn these last so that eight teeth shall be on the same line; at which one should find two tooth-spaces coinciding with the two little oil-holes in the cover-plate. To retain these parts fixed in position, have ready a U-shaped staple of stout wire, and set the ends of it through the holes right into the tooth-spaces. Thus held, set on the plate, when the planets will automatically mesh with the gears—and attach it by two of its bolts. Then, being satisfied first that the adjustment is true—the free movement of the tappets when the motor is rocked will show this—insert the remaining bolts, and set their nuts home. Finally, tighten up the screw-bolt which carries the planetaries, and withdraw the U-shaped staple from the oil-holes.

It must be understood that this train of distributing gear constitutes a differential of sorts; so that if all the foregoing precautions to ensure perfect adjustment are not scrupulously followed, the teeth will infallibly jump endwise on each other, and the gears seize and break.

### Tappet Clearance.

For similar reasons, the utmost care should be taken with the adjustment of the tappets; so as to leave no less than a millimetre of play between the end of the valve-rockers and the valve-stem ends: that is, so that the valves should still be able to open a millimetre or so further. Anything short of this exposes the whole of the valve-gearing—especially the pinions—to undue strain; consequently this adjustment, once found, should never be touched, except to verify it. In fact, the great secret of running the Gnome—or any other motor—successfully, is to let well alone.

### Ignition Adjustment.

The adjustment of the ignition, on the other hand is comparatively simple: as one has only to rock the cylinder—for instance No. 1—to dead point, counter-clockwise, and set the ignition to firing-point, when half the angle between No. 1 and No. 2 will represent about 26 degrees from the vertical. Exactly to this point the magneto-break should be adjusted; which is done in the usual way by de-meshing its gear and re-meshing it again as soon as the various points agree.

### Spark-Plug Points.

Here one may well ask why it is that the Gnome motor escapes the notorious vice of so many other rotaries, fouling of the plug-points owing to the centrifugal flow and lodgment of lubricant. The answer is simply that the plug insertions or pockets are entirely outside the cylinders, and the opening therefrom is so small as just to admit the points; and these neither beyond nor behind the line or face of the cylinder-wall; so that there is no opportunity for lodgment of any substance, burnt or unburnt, on the points or near them. It is sufficient then to scrape the plug-points from time to time very lightly, and keep them well submerged in a small vessel of petrol while dismantled, burning it off the moment before re-insertion.

### Oil-Pump Regulation.

The oil-pump being automatic—a simple two-plunger spring-and-cam-shaft operated affair—needs no regulation. It is, however, a counsel of perfection to renew the springs from time to time; using the occasion to wash all parts as well as the conduit piping with a syringe-full of a mixture of four parts of the best refined kerosene to one of petrol; which will remove every particle of foreign matter that may—for no conceivable reason—have found its way into the system. Purposely I deal with this point of maintenance out of place; for while perfect lubrication—absolutely clear, clean and uninterrupted—is the health essential of any motor, it is the very life-blood of the Gnome. For the rest in general, one need only make sure that the oil flows from the reservoir with sufficient freedom for the pump to deliver its proper output; which can be determined by closely watching the sight-feeds.

### But If Not.

With all the light-hearted irresponsibility of the catalogue it may be said that after some seconds' running the sight-feeds should not show a single air-bubble, and certainly none when the motor is in full work. But that is the language of the mere write-up; no earthly—still less aerial—use to the practical pilot, whose question "Suppose it doesn't work, what then?" demands a practical, responsible answer as the first of duties. Frankly, it may work all right, but one cannot be sure that it will in the following circumstances; which note, as it may be your own case to-morrow, and "the coroner for yours" if you neglect it. They are:—

If the motor is a new one, installed for the first time.

If the oil-tank has been run empty (which happens about nine times in ten after a long flight) or:

If, having been run practically to the last drop, the oil-tank has been filled completely (which, by the way it never should be, as that leaves no room for the essential air; or again

If the air-pressure has not been maintained, for any reason, or for none at all; or finally,

If no one—least of all the "mecano"—is quite sure of the exact state of affairs.

### Go Gently.

Now, before tackling any of these cases, one takes it for granted that the oil-tank is so placed as to give gravity every chance. It should also have a gauge-glass fitted to show the level at all times. Personally, I have an old-fashioned liking for that extra length of tubing which enables two double spiral turns to be formed at each end, because these turns give just that amount of spring to the connection, which takes up vibration, saves fatigue of material—copper is the rottenest of metals once a certain degree is past, despite its known elastic virtue in alloys—and consequently avoids breakages. Further, I would add that my old friend Charles Jarrott owns—or did own—the concession, patent or something of the kind, for the only truly reliable attachment for copper tubing I ever saw: a kind of tapered flanged sleeve enclosed in the open joint-nut; which somehow jammed the tube-end between itself and the inner body of the nut as the latter screwed home.

This degeneration as to essential safety fittings apart, one may come to the *quai faire* of the matter. Do nothing radical

or violent. Don't poke about with wooden splinters or lengths of wire, or even that instrument of female salvation, the common hairpin. You have to do with a motor that cost probably twice as much as the aeroplane, not a shilling briar. First, then, see what half a dozen slow, full strokes of the hand-pressure pump will do. Perhaps nothing. If so, you have at least established certain useful pounds of pressure above. There is probably some sort of airlock below, in one of those parts whose narrow diameter strengthens resistance. On the top of the pump then, you will notice a little relief nut. Unscrew this completely, and at once you will see the oil trickle out—it may even spurt—along with bubbles of air. Waste the oil then until the last bubble passes: you will then have destroyed the air-lock, so replace the relief-nut. Then open the oil-tap and you will find that the air-pressure in the tank suffices to load the pump.

#### To Ease Starting.

But—it may be a cold day, "somewhere in France,"—or Germany—so that the oil has gone thick. The book of words will tell you something vague about a "special heating arrangement." If that means a blow lamp or something with a naked flame, allow no one to approach with anything of the kind, unless, in addition to having the connections heat-rotted, you care to risk the burning up of the whole machine. Simply go to work in the old-fashioned way with a bucket of boiling water and a few cotton cloths: applying as many as possible at a time.

Again, the motor itself, if new, may be full of air. The "mecano" should have soused it with castor oil internally during the assembly; but as he has probably forgotten to do this, cast loose the connections at the shaft end, and with a couple of syringe-fulls, pump the oilways of the motor as full as they will hold; until indeed, the oil spouts back the moment you remove the nozzle. As one of the beauties of the Gnome design is that every part is drilled hollow that can be—and generously at that—you will be astonished to find how much oil it can hold, before you re-attach the tubing, having cleared out the last spit of air.

#### Why Castor?

And why should you use castor-oil; apparently the worst in the whole list of lubricants; a vegetable oil with a heat-graph that looks like a precipice? Simply because it is the worst *after* the heat-point is reached, and being consequently instantly carbonised, is easiest got rid of in the exhaust-blow. But up to that point, it is the best because it is the most "suent" as they say in the West-country. Of course, it is horribly extravagant. True, but it suits the Gnome, or any rotary, like no other; and all the mixing with petrol or any mineral-oil product you may devise will not better its quality for this special purpose. Let your sole concern then be to see that it is the best that money can buy. It will then be just good enough to use in a Gnome.

And in the case of a new motor, it is as well to make sure, before even seeing whether the oil runs as it should, that the oil-pump cams are keyed on their shaft in the right way. On the two front faces of the cams you will see the letters D and G in opposite corners of the ramps. If the motor is to be run in the usual counter-clockwise, or left-handed way, the cams should be keyed on so that the two G's are in a line parallel to the shaft; but if the motor is to be run right-handed or clockwise, the two D's should be in line. See also that the spiral springs have been put on right: the big ones surrounding the delivery plungers and the small, round the suction plungers.

#### Fuel Feed.

All the foregoing directions apply equally to the fitting and adjustment of the fuel-feed system, with no more differences in detail than will be readily apparent; and—allowing of course for the mechanical differences of detail rather than principle—all that has been said as to the adjustment of the valve-gear distribution system of the ordinary Gnome motor applies to that of the monosoupape.

#### Monosoupape Adjustment.

—That is to say, the same mechanical methods of adjustment

are employed, but the differences in the phase-cycle (that is to say the periods of inlet, compression, firing and exhaust) must be taken into account. Also, it is to be noted that half the angle between the cylinders of the 100-h.p. "B" type is 20 instead of 26 degrees. The exhaust period lasts too, over three-quarters of a revolution; that is from 90 degrees beyond upper dead-point up to that point again.

Therefore before posing the cam-sleeve for adjustment with the rolling gears, the "crown-drum"—the rocking of which, it will be remembered, regulates the degree of valve-lift—must be rocked to the position of maximum lift. Then No. 1 cylinder should be rocked over counter-clockwise to 90 degrees, that is, at right angles to the vertical, midway between dead-points—with the spring on its exhaust valve: and then the cam-sleeve should be turned by hand, clockwise, until cam No. 1 begins to lift its tappet sufficiently for the rocker above to touch the stem-end of the valve. This position attained of course gives the 'setting' for the whole; and the subsequent setting of the planetary or rolling gears proceeds in the same way as for the ordinary Gnome; the marks Z on the upper edge of the front plate and on the crank-case—in line with the axis of cylinder No. 1—serving as guides.

#### Ignition Adjustment.

Likewise in adjusting the ignition of the monosoupape models, it should be noted that the advance is over 15 degrees; so the cylinder No. 1 should be rocked back clockwise to 15 degrees in advance of the upper dead-point. To correspond, one sets the break of the magneto, de-meshing and re-meshing its pinion as before.

But it is essential, before locking the attachment of the ignition control wheel, to see, first that the wheel itself is fully locked at the limit of its rotation; secondly, that at the instant of the magneto-break, the secondary carbon is already in contact with the copper segment of the distributor; and thirdly, that this carbon does not leave the segment until after contact with the platinum point of the magneto lead.

However, when the motor is fitted with a toothed distributor for starting, these conditions are already provided for by the construction; the distributor in this case being simply keyed in the right relation to the magneto.

#### Valve Setting

Finally, as to the essential adjustment of the exhaust-valves. Their seatings, it should be remembered, are designed among other things, to act as the inspection doors for the motor at all times; and from time to time should be used as such, to note the condition of the inlets (in the ordinary type)—which nevertheless should be let alone as much as possible—and to see that the connecting-rod heads have not been burned: this being the result, on the other hand, of neglecting the condition of the inlets.

The main thing, however, in mere assembly adjustment, is to see that the valve seatings are so set in on their metal joints, that the rockers are dead parallel with the axis of the motor, i.e., with the crank-shaft line.

#### Uneven Firing.

But this is not quite all. If, during the first few revolutions of the motor, one hears any abnormal rattle at each explosion (as distinct from each revolution) this shows that the open nut which sets the attachment or "flywheel" web on the taper of the shaft has not been sufficiently set home, and that the key is consequently setting up a knock. The remedy is of course obvious.

If again, any irregularity occurs in the firing of one or more cylinders, look to the magneto, the sparking-plugs or—to the sticking of inlet-valves. But if, after all, a certain unevenness of beat, which is not misfiring, still persists, one may be almost sure that the valve-gear is not truly adjusted. Probably the trouble will be that one of the exhaust-valve rockers is not quite in line; and just as probably that the adjustment-nut on some tappet has been tampered with, or somehow overlengthened the rod connection, so that the essential millimetre play has been lost, and binding is taking place. Here again, the cure is obvious; the only trouble is to detect the trouble. But—never rest content until you do.



### The "Trade" and the R.N.A.S. Fund.

Members of the aeroplane industry may be interested to see what the employees of the various firms concerned with the production of aircraft to Government orders have done to support Mrs. Sueter's Fund to provide comforts for the men of the Royal Naval Air Service. Below will be found a list of the contributions from the "Trade" in order of the amounts subscribed. It is particularly gratifying to see how handsomely some of the smaller firms have come forward, and also how firms who only partly exist on Government orders have subscribed.

It is, however, unfortunately, only too clear that the vast majority of the factory operatives, apart from the directors and staffs of most firms, do not care in the least about the bodily comfort of the men who are working to protect them and their families from German aggression, despite the fact that the production of the war material for those men is providing the said operatives with wages far higher than most of them ever hoped to draw, or are ever likely to deserve. There are, of course, many very honourable exceptions, but in the main the British workman has been a disappointment in this small matter as in almost everything else connected with the war.

If every man in every aircraft factory had subscribed a solitary shilling a week during the twenty weeks covered by the Fund up to date—which would not have been much out of the £3, or £4, per week most of them are drawing—he would only have subscribed a sovereign altogether, yet the total amount would have been thousands of pounds, instead of a few paltry hundreds.

The following are the amounts:—Sopwith Aviation Co. (Directors and Employees), £42 12s. 7d.; J. Samuel White and Co. (Directors and Staff), £34 13s. 11d.; Aircraft Manufacturing Co., Ltd. (Mr. Holt Thomas and Employees), £28 6s. 2d.; Thos. Firth and Sons, Ltd. (Directors), £26 5s.; Cedric Lee Co. (South Coast Aircraft Works) (Directors and Employees), £25 19s. 6d.; Grahame-White Aviation Co., Ltd. (Directors), £25; White and Thompson (Staff), £20; A. V. Roe and Co., Ltd. (Directors and Employees), £16 5s. 9d.; Hewlett and Blondeau, Ltd. (Staff and Employees), £13 15s.; Royal Aircraft Factory War Relief Fund (Employees), £11; Vickers Ltd. (Aero Mechanics £6 10s. 6d.), (Woodworkers £4 3s.), (Mr. Thomas £1), £11 13s. 6d.; Accles and Pollock (Directors), £10 10s.; General Aeronautical Contractors, Ltd., £10 10s.; Short Bros. (Staff), £10 10s.; Mann and Grimmer (Employees), £9 5s. 6d.; Armstrong-Whitworth (Employees), £8 12s. 9d.; Cellon Ltd. (Directors), £5 5s.; Integral Propeller Co., £5 5s.; English Sewing Cotton Co., £5; Blackburn Aeroplane Co. (Employees), £4 5s.; Blériot Mechanics, £1 4s.; Hoyt Metal Co., £1.

The total of the Fund to March 24th was £887. The "Trade's" total contribution to that was about £335. Of this the well-paid British workman's portion amounts to less than £110, all told, so it rather looks as if in this matter the working man agrees with a writer who stated recently that "this is a middle-class war."

### Concerning Engines.

Apropos Mr. de Holden-Stone's article last week, a correspondent refers to the passage in which he states that "in all tractor installations with Gnome engines the beak-shaft rotates in a ball-bearing in the front plate of the mounting frame." It is pointed out that the statement is inaccurate, because in the Morane monoplane there is only one engine plate which holds the crankshaft, and a back collar held by support tubes, the cylinders and propeller overhanging in front. Of course, taken literally, Mr. de Holden-Stone's statement was incor-

rect, because in many out-of-date machines, such as the now extinct Deperdussin, and some Bristols, and in various French monoplanes, the overhung engine was commonly used, but the fact that certain Government Departments are foolish enough to order out-of-date machines does not make these same machines up-to-date. It therefore remains true that in all modern tractor installations the Gnome engine is supported in front by a bearing between the engine and the propeller.

### Patent Fever.

The Comptroller-General of Patents, Designs, and Trade Marks stated in a report published on Saturday that the outbreak of war naturally provided a stimulus to inventions connected with military and naval subjects, particularly aerial warfare and submarine mining. Bombs and their projection from aircraft have claimed considerable attention from inventors. The revival of ancient methods of warfare is shown in applications for darts, mechanical means of throwing bombs, and other projectiles, and body armour.

### A Matter of Reliability.

Seeing that the safety of pilots and passengers depends absolutely on the reliability of the engine fitted to aeroplanes, and seeing that the reliability of the engine depends so largely on the right lubricant being used for each type of engine, it follows that the quality of the lubricating oil used in aero engines is of very much greater importance than it is in any other internal combustion motor, because the aero engine is running practically at full bore the whole time, whereas it is only occasionally that a car or lorry engine is asked to give more than half its full power for any length of time.

Recognising the fact that engines of different types demand entirely different qualities of lubricant, Messrs. C. C. Wakefield and Company, the makers of "Castrol" lubricants, have from the early days of motor-cars made a speciality of producing different qualities of oil for different engines, and since the coming of the aeroplane a similar policy has been pursued, with the result that it is now possible to obtain from the firm precisely the correct oil for whatever engine may be used.

The fact that practically every first-class civilian flier before the war used Castrol for Gnome engines shows that the firm have produced precisely the right oil for that particular make, and the large quantities of Castrol used by the R.N.A.S. and the R.F.C. shows that the quality supplied is regularly maintained. Officers using their own cars can likewise be sure of getting the right kind of oil for their particular engine if they will merely write to the firm mentioning the make of their car and asking for the particular type of oil judged by the firm to be most suitable.

In the writer's own experience, though he has tried various makes of oil in a small car engine, he has never succeeded in getting such good results as when using the particular brand of Castrol recommended for that particular engine.

### "Titanine."

In order that individual attention may be given to the development of the business in "Titanine" dope, this commodity will in future be marketed by a separate concern known as the British Aeroplane Varnish Company, Ltd., whose offices are situated at Milburn House, Newcastle-on-Tyne, and 57, Fenchurch Street, London, E.C. Holzappel, Ltd., Newcastle-on-Tyne, will continue to manufacture the dope for the British Aeroplane Varnish Co., Ltd., and the management of that firm has been undertaken by Mr. T. W. Holzappel. "Titanine" is already meeting with great success in the aeroplane industry, and no doubt the new company will find its hands sufficiently full in attending to the marketing of this product.

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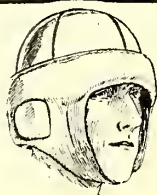
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With so many bad and indifferent books on the market dealing with aviation, it is the greater pleasure to be able to review even briefly a thoroughly good book on aviation by a man who knows what he is talking about, and who is able to express himself clearly in excellent English. The only thing bad one can say about "The Airman" is that its title is the only thing in it which is not good. Even if it had been called "Airmanship" it might have been a better title.

Captain C. Mellor, R.E., the author of this book, has actually produced a book on airmanship, using the word in its true sense. The contents of the book are an exceedingly simple, but none the less interesting, account of how the author himself learned to fly and his various experiences in doing so. It is true that his experiences deal entirely with a French school, namely, the Maurice Farman School at Buc, but the process of learning is so precisely that which occurs to-day at the ordinary British schools that the description is quite as useful as if the book had not appeared first in 1913.

Actually, the value of the book is increased, because it deals entirely with learning on a Maurice Farman, which is probably as nearly the ideal machine on which to teach as any existing, and the Maurice Farman is to-day more largely used than any other at the various naval and military schools.


One phrase in the book, which seems to have dropped in by accident, is of peculiar interest to-day, for, written as it was two years ago, it is now the unkindest possible criticism of the Government's handling of the question of aeronautical matériel. Captain Mellor says: "It is the absolute necessity for the aeroplane in war which is tiding the industry over this present semi-experimental stage, which must precede the full

development. The way in which the Government orders are placed may make or mar the industry."

The way in which the Government placed orders in 1913 marred the industry, and that is why we find to-day a rush to get aeroplanes made by agricultural implement makers, boat-builders, furniture-makers, and soft goods stores, whereas intelligent encouragement two years ago would not only have established an enormous aircraft industry on a firm footing, but would actually have produced very much better aeroplanes than anything we possess to-day at very much less cost.

If the money which has been wasted, apart from that which has actually been utilised in producing results of value, at the Royal Aircraft Factory had been put up by the Government in the form of prizes for competition among aeroplane constructors, as the German Government put up prizes for competition in 1912, 1913, and 1914, we should have had far better aeroplanes than anything we possess to-day, although it is true that such aeroplanes as we do possess are better than any others in the world.

However, to return to Captain Mellor, the present writer strongly recommends his book to every young officer who is about to join either of the Flying Services, and also to every pupil and would-be pupil who hopes to join. In fact, it is indispensable to every pupil. Also, it is strongly recommended as a present to friends and relatives of pupils, simply because the descriptions therein of learning to fly, and the illustrations of the machines, which, by the way, are beautifully reproduced, apply so exactly to the pupils' own experiences that the book will save them any quantity of descriptive letter-writing, and at its price of 3s. 6d. it actually comes cheaper than letter-writing to a busy or a lazy man.



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### An Explanation.

The following letter has been received:—

"Sir,—You suggest, in your review of 'Aircraft In the Great War,' by Mr. Grahame-White and myself, that this book fails to fulfil a purpose that we, as its authors, never intended it should fulfil.

"The book is, as was explained in the announcements of our publisher, entirely non-technical. It is not written in any sense for the expert; it does not pretend to convey information to those who are close students of aviation. It deals mainly in fact, and of necessity, with such reports as have been made public, either by the authorities or in the Press; and these reports it seeks to bring together and explain, for the benefit of ordinary readers, so that they may learn more than the newspapers can tell—and this without risk of any disclosure of facts which might be against public policy—of one aspect of the work of war that has proved peculiarly interesting to them.

"That the book finds acceptance had already been made clear; and, rather than being premature, as you suggest, I hold the view that such a book—dealing as it does with the data provided by six months of war, and bringing this subject to general attention while interest in it is still keen—fulfils a very distinct service, and will have an influence on public opinion that is beneficial." (Signed) HARRY HARPER.

[If, as Mr. Harper suggests, the book is to be classed as journalism rather than literature one is the more surprised to find the name of an officer in the King's Service given as partner. Presumably Naval rules are as strict as Military rules in this matter.—Ed.]

### School and Weather Reports.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
Hendon ... ..	Windy	Windy	Fine	Windy	Fine	Windy	Fair
East Coast ...	Fine a.m. Wet p.m.	Wet	Fine	Wet	Fine	Fine Windy	Fine Windy
Lake District	Windy	Very Fine	Very Fine	Fine	Fine	Rough	—

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At THE RUFFY-BAUMANN SCHOOL.—Instructors: Messrs. E. Baumann and James Brothers. Pupils with instr. on 60-h.p. Caudron: Mr. Bell (10 mins.), Mr. Roobaert and Hydon doing straights on 45-h.p. On same machine, rolling, Mr. Bell and King (12), Jackson and Blandy (8). Mr. Sykes joined the school. Machines: 60-h.p. Caudron and 45-h.p. R.B. tractor biplanes. New machine (two-seater) arrived.

At THE HALL FLYING SCHOOL.—Instructor: Mr. J. Rose. Pupils: Messrs. A. Davy, Waterson, E. Mitchell, E. Cini and E. J. Furlong doing straights, and Lieut. Blythe half circuits. Machines: 35-h.p. tractor, single-seater; 45-h.p. tractor, two-seater; and a 35-h.p. tractor, two-seater. A 50-h.p. Gnome tractor ready shortly.

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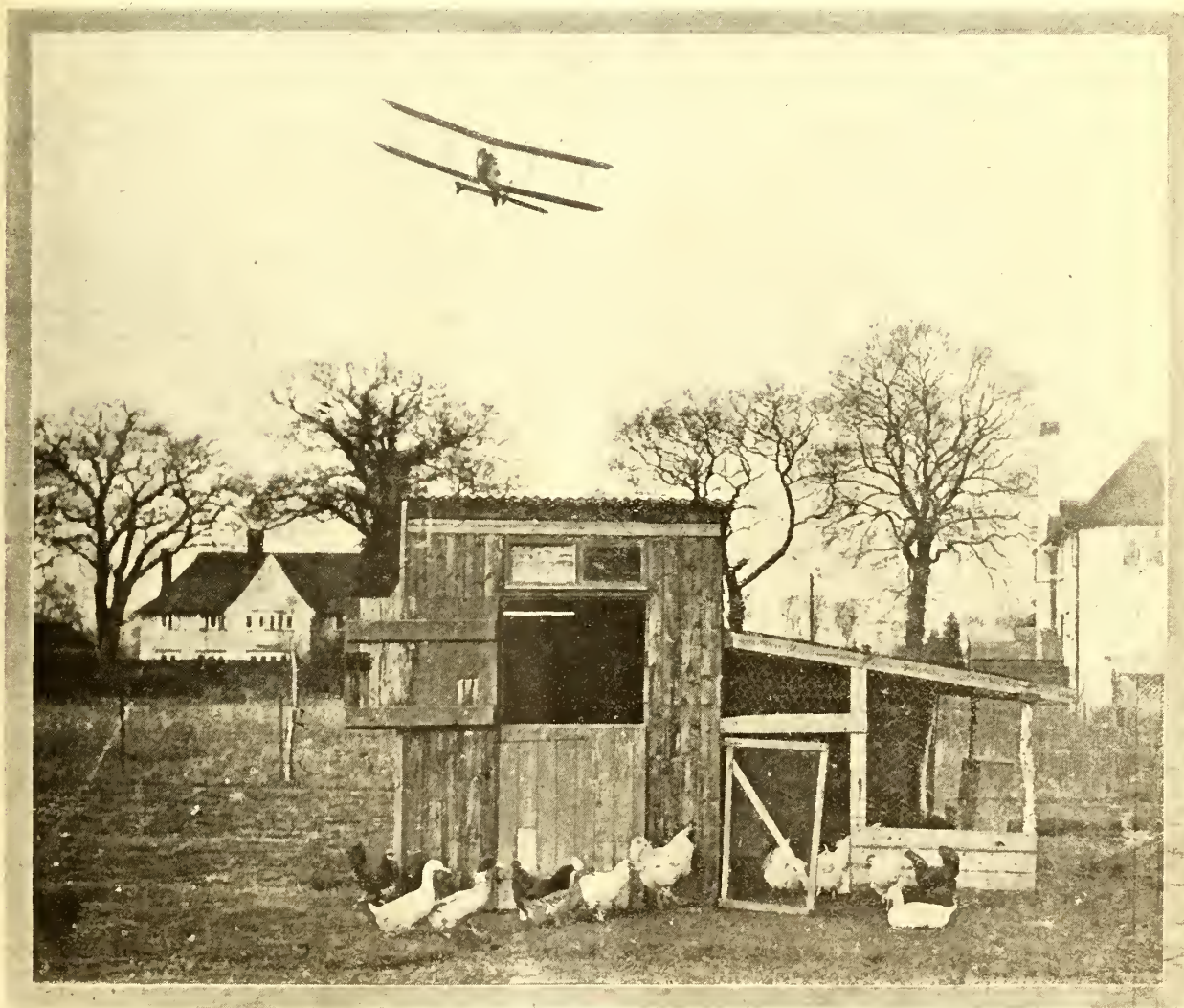
*Edited by C. G. GREY. ("Aero-Amateur")*



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No. 14

## A LIBERAL EDUCATION.



A snapshot of Mr. Harold Barnwell on a Vickers-built B.E.2c. flying over the aviators' garden near Brooklands. The livestock in the foreground are the property of the co-operating pilots. Their stolid indifference to the approaching aeroplane may be taken as indicating a thoroughly English attitude towards anything of an educative nature. On the other hand it may indicate contempt for the latest flying machine design on the part of species who used to fly but retired from aviation some centuries ago.



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## Stories with Morals.

There is a highly esteemed legend which tells us that the Great Napoleon held that almost the greatest of all military virtues is that quality which he called three-o'clock-in-the-morning courage. Probably every other general, from Joshua to Joffre, has expressed more or less the same opinion. I set Joshua down as the first of the great generals because he is about the first who is recorded to have made war on properly scientific principles. His highly efficient spy system, and his custom of knocking down walls regardless of civilian life and property, showed a thorough military sense and an estimable lack of foolish sentiment.

However, there is one quality which does not seem to have been valued for military purposes as highly as it deserves, though it is the one in which aviators in particular excel, and have the most opportunity of practising—that is, daybreak humour. But it is apt to be a grim humour, as in the case of my young friend George, who always wishes in the early morning that he had died in the night.

There is an example of daybreak humour at present circulating around the Royal Flying Corps, which it is my duty to make known, because it contains half a dozen excellent moral lessons rolled into one, and the chief aim and object of this paper is, in the language of the famous showman, to "attend to the morals of this 'ere establishment."

### A Case in Point.

The incident took place at about 5 a.m. some months ago, somewhere in France. A flight-commander, R.F.C., whom we may call Macmichael, because there is no one of that name in the Corps, and a flying-officer, whom, for a similar reason, we may call Badger, shared a billet, and were about to turn out for the usual daily routine of flopping round over a bad imitation of the Black Country between Birmingham and Wolverhampton, and signalling to our guns whether they had adequately destroyed the chimney of the local refuse destructor or some other salient feature of the landscape which might be used as a German fire-control station. It was dark, and it was very cold, and neither was conversationally inclined.

### Sumptuary Laws.

Badger was having breakfast, and Macmichael was finishing dressing—for the R.F.C. insists upon neatness of dress as much on active service as at home, hence the order issued to a certain squadron in the wettest of the wet weather that "gun-boots" were not to be worn at the aerodrome, on account of their unsoldierly appearance, and that "slacks" are not to be worn before 2 p.m. These little sumptuary laws do not appear designed to defeat the Germans, but rather to maintain the self-respect of the Corps, and to give the enemy a proper regard for the soldierliness of any of the R.F.C. with whom they may meet. For example, what opinion would a smart, efficient German aviator form of the R.F.C. if he, flying one of the new big German gun-carriers in the early morning, chased and captured a B.E. 2c. containing an observer in gun-boots and a pilot in slacks? And if the situation were reversed, and if the German were captured instead, he would doubtless die of mortification of spirit at having surrendered to such a motley crew. Personally I am

for smartness in the field, and, besides, dirty clothes and boots and irregular equipment weigh so much more, which is always a consideration in an aeroplane, especially if underpowered.

### The Staff Appears.

However, I appear to be wandering from the point. Badger, as I remarked, was having breakfast, when there came a loud hammering on the window. Why the window was chosen instead of the door still puzzles the hero of the story. Then the window was thrown up from the outside and the brass-bound head and red-tabbed collar of a youthful and excited staff officer appeared. In answer to Badger's inquiring expression—his heart and mouth being too full for words—the brass-hat panted: "The Germans are shelling Division headquarters, and the general says you are to send up an aeroplane at once."

Now 5 a.m. on a dark and cold morning is no time to issue futile and indefinite orders to a flying officer who has seen much service, and probably knows from his habitually panoramic view of the war what small and no-account things divisional headquarters are in the esteem of everyone except the red-tabbed inhabitants thereof, and somehow someone somewhere had forgotten to tell the booted and spurred and muddled Mercury what the dear old general expected the aeroplane to do when it was sent up.

Still, such details did not trouble the undefeated Badger, who, with his mouth full of bacon and egg, shouted towards the back of the billet, "Mac-mi-i-chael!" A slightly peevish voice from the sleeping department demanded to know what was the cause of excitement. To which the Badger replied: "There's someone here who wants you to stop the war!"

### The Morals Thereof.

Morals:—(a) General officers should have a working knowledge of the limitations of the weapons at their disposal. (b) Staff officers should be careful to obtain and transmit specific instructions. (c) A bright and cheerful early-morning countenance is a much-to-be-desired possession. (d) It is a mistake to be an aviator if one dislikes early rising. (e) A single arm of the Service cannot stop the war—proper correlation of effort is desirable. (f) It is rude to speak with your mouth full. (g) A soft answer turneth away work. (h) Several others which may occur to the intelligent reader.

### Those Red Tabs.

Writing of Staff officers, these appear to be of two kinds—those who are on the Staff because they are needed to run the Army, and those who are on the Staff because they are unfit to run a Ford. The latter kind are generally relatives of Someone else—with a capital S—and are put onto Staff jobs after they metaphorically "piled their ships" at something of a simpler kind.

The ideal Staff officer is born and not made, and the R.F.C. has been exceptionally lucky on its own Staff, but there are others for whom Staff jobs have become a kind of *refugium peccatorum*.

There is a humorous story going round of an officer



who has held many staff appointments of one kind and another, and had views of his own on the capabilities of mechanical transport vehicles. It is said that on one occasion he desired to move a certain wagon, pertaining to the R.F.C., and containing equipment of some immediate importance, from a position where it was exposed to the eagle eyes of German aviators to a sheltered spot in a hollow where it would be protected from wind, weather, and view.

There were, one gathers, two ways into the said hollow, one by a circuitous but safe road, and the other by a precipitous descent down which a man used to the handling of toboggans might with luck reach the bottom undamaged on a vehicle designed for the purpose—but it was not engineered for wagons of any kind. Even an Army "caterpillar" might have jibbed at the descent.

#### **A Slight Argument.**

The simple-minded transport officer estimated the time necessary to reach the desired position round by the road as being something over half an hour, whereas the officer with an active brain estimated that with the aid of a dozen men and a drag-rope the wagon could be got down the precipice in ten minutes. The discussion produced an argument, and the argument produced a wager, and the advocate of rapid transportation, being the senior officer, had his way. The ground being rough, it took eight minutes out of the ten to get the wagon to the brink of the descent. The first few yards over the edge took another minute, and then something went wrong, and the remaining hundred feet or so took about five seconds, the wagon landing upside down, minus wheels and most of its contents. Whatever remained inside the wagon was squashed somewhat out of shape—and, curiously enough, no one was killed.

History does not tell us whether an agreement was reached as to who won the bet, but the wagon certainly reached the bottom of the hollow within the specified time—and that section of the R.F.C. was short of certain equipment for a period rather longer than that which would have been if the wagon had gone round by the road.

Rumour has it that when someone higher up investigated the matter it was decided that such ingenuity was wasted on ordinary squadron duties, and that so active a brain was better fitted for the Staff. And the more simple minds are discussing whether this smart officer did not deserve the D.S.O.

Experiments have to be tried, even during war-time, and, if the wagon had got to the bottom unharmed, quite a lot might conceivably have been learned about lateral stability and longitudinal control, and so the efficiency of the R.F.C. might have been raised to a still higher level. And, after all, the Staff are really the chief authority on efficiency.

The moral is:—A slip at the wrong time costs nine times as much as it need. Also, "Softly, softly catchee monkey"—if not D.S.O.'s.

#### **Things They Do Better.**

There is an old saying to the effect that "there are some things they do better in France," and the truth of the said saying has been rubbed in pretty hard in this war. For instance, there is the little matter of conscription, by which France has not only been able to raise an enormous army in a remarkably short time, but has been able to deal effectively with lazy workmen by the simple process of mobilising them. Also, there is the seriousness with which everyone in France regards the war, in contrast with the carelessness or apathy of a great many people in this country.

As between the men in the fighting line there seems to be nothing to choose. M. Bonhomme, now become M. Poilu, is as cheerful in adversity, as brave in attack, and as tenacious in defence, as is Mr. Atkins. M. Bonhomme is, perhaps, more purely patriotic, and not so much of a scrapper for scrapping's sake as Mr.

Atkins, but his staying power is about the same, and for this staying power he may thank the vogue for "athlétisme," which has over-run France in the past twenty-five years.

Incidentally, it is of interest to note that this vogue arose from the popularising of cycle racing—a sport which never appealed to any great extent to the better class people in this country. Long-distance cycling is really one of the finest games in the world, and the admirable combination of muscle and will-power required to "stick it" for a hundred miles or more on the road appealed to the French imagination, whereas to most Englishmen it merely seemed a silly way in which grocers' assistants and such low-down folk chose to become very tired and dirty.

The French took to the game before the English, but about 1890 or so certain British athletes, notable among whom were Mr. S. F. Edge, whose name is not unknown to motorists; Mr. Frank Shorland, also of some note in the motor industry; Mr. Montague Holbein, later a famous swimmer, and Mr. G. P. Mills, now an automobile engineer of some eminence, went over to France at intervals, and because of their systematic training beat the French handsomely in the big races from Bordeaux to Paris, and in other long-distance events.

Thereafter, the active French brain saw the advantage of training for "staying-power," and in a few years the French stayers, as well as their sprinters, beat the world, and long-distance cycling became practically the French national sport, as anyone knows who has driven along any French main road on a Sunday in the summer.

It is to such training that the staying-power of the young French soldier is due, so one might almost claim that Messrs. Edge, Mills, Holbein, Shorland and Co. are primarily responsible for the resistance the French infantry are putting up.

#### **Things They Do Not Do Better.**

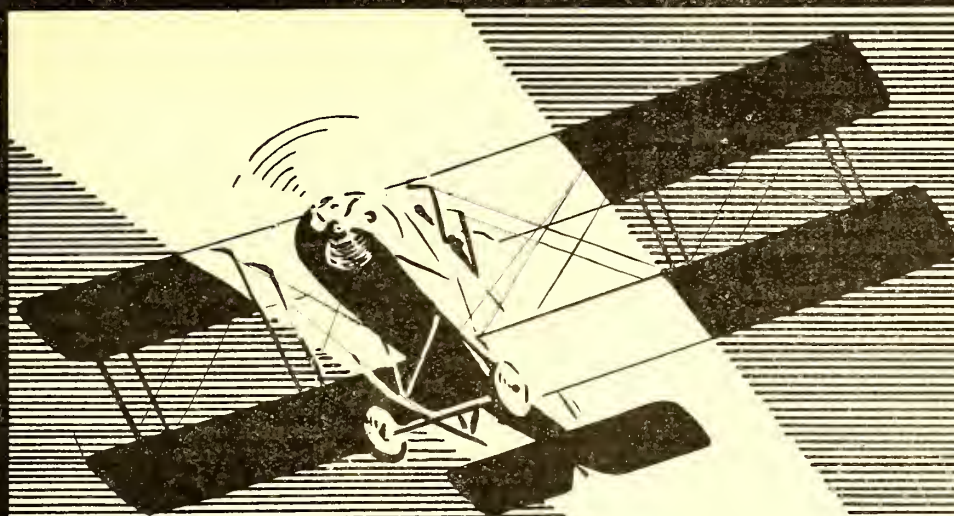
There are, however, some things which they do not do better, or even as well, in France, thanks to bourgeois political dishonesty. For example, there was the matter of the armament of certain forts, which surrendered at once to the German advance, not because the men gave in, but because the forts simply could not hit back at the German guns. Which was why something like 30,000 French Territorials had to surrender at Maubeuge without firing a shot.

Also, there was the rottenness of the French "Aviation Militaire" at the beginning of the war, thanks to its being full of men who joined for the extra pay, or for the "réclame," and not because they liked flying.

Some months before the war a naval officer, who had visited a big French port, told me of the low estimation in which the French Navy held the "Aviation Militaire." According to the French Naval officers the local Centre d'Aviation was run by an Army officer who was practically the owner of a big motor garage in the town. All the petrol for his "escadrille" was bought from his garage, and most of it was simply poured out on the ground, the amount bought—and wasted—representing on paper so much petrol consumed in the engines of his aeroplanes, and thus accounting for so many hours' flying at so many gallons per hour, which were booked up accordingly in his official reports.

This was not an isolated case of "graft," and it was only natural that where such things were possible the general standard should be low, so that, as has been said in this paper before now, though there were plenty of machines and pilots on paper, many of the machines were unfit to fly, and the pilots were a poor lot. Of course, there were many honourable exceptions, such as the various escadrilles which did such good work in Morocco, and in sundry tours round France, but the generally bad state of French military aviation accounts for the enormous percentage of losses.





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When General Hirschauer was again appointed to the control of the "Aviation Militaire" a wholesale clearing out took place, and the French aviators have done far better than in the early part of the war, but even now there is room for improvement.

#### That Zeppelin Raid.

The other day, when the "Zeppelin Raid" on Paris took place, we were told that the fleeing airships were pursued by aeroplanes but escaped in the fog, and that the "Escadrille de Paris" had thoroughly vindicated its existence. Those who were in Paris at the time, and who are closely in touch with aviation, have a very different tale to tell.

According to them, the two "Zeppelins" were a Zeppelin and a Parseval—at any rate, there was a big ship and a little one—and they remained playing about over Paris for an hour without being hurt. Apparently, the anti-aircraft guns were not arranged to protect the very important districts engaged in manufacturing munitions of war, but merely to cover the "official" districts, round the Place de la Concorde, and so forth, which, from a military point of view, are of far less importance. It was merely bad bomb-dropping which prevented serious damage from being done, not anything in the way of defensive-offensive measures.

When the "Zeppelins" had got rid of all their bombs they went calmly home, unmolested. And when they had been gone for an hour and a half, the "Escadrille de Paris" apparently woke up, and said: "Where are they? Lead us to them!" or words to that effect.

One hears that the pilots who were supposed to be on duty that night were actually sleeping in Paris, and although the aerodrome at which the escadrille is stationed had had warning an hour and a half before that the airships had passed Compiègne, and although the fire-brigade had warned Paris to put out its lights, none of the pilots turned out their machines till the Zeppelins had gone.

That is to say there was an hour and a half between the warning and the arrival of the airships, an hour while they were over Paris, and an hour and a half after they left, before the first aeroplane turned out, or four hours in all during which nothing was done. And when two or three aeroplanes did go out they merely circumnavigated the aerodrome at a safe altitude and landed, reporting that it was too foggy to proceed.

Actually, when the airships were overhead it was a gorgeously clear night, without a cloud anywhere, and the so-called fog was the mist of dawn, for which the pilots apparently purposely waited.

#### The Joke of Paris.

In fact, the "Escadrille de Paris" is a huge joke to the really honest, hard-working first-line aviators. It is commanded by a M. Girod (now Commandant—or Major) normally Deputy for a place called Doubs. M. Girod is, doubtless, an honest "bourgeois-gentilhomme," and he has done much talking about aviation

in the past—but he cannot have any sense of humour, or he would never represent a place with a name like Doubs, suggestive only of a lump of mud. M. Girod seems, in fact, a kind of French edition of Colonel (temp. Brig.-Gen.) Seely, who had sufficient mental activity to see some years ago that aviation had a big future, and resolved to identify himself with it, but had not the mental power to develop himself along with the developments of aviation.

M. Girod doubtless commands his precious escadrille to the best of his mediocre ability, but the poor man cannot be expected to sleep in his aeroplane and see that the "pilot of the night" is always on the alert at the first alarm. Therefore, one can scarcely hold him personally responsible for the fact that his escadrille seems to be composed chiefly of "embusqués"—or gentlemen who have "ambuscaded" themselves for fear of active service—who have slacked in Paris ever since war began.

It is true that Lieutenant-Aviator Roland Garros once joined this escadrille—for a rest, after a spell of hard service at the front—but he left it in disgust a few days before the Zeppelin raid, and has since distinguished himself elsewhere.

The comic aspect of the "Escadrille de Paris" may be judged by the fact that one of the pilots went up to fight Zeppelins on a single-seater scout, armed only with a revolver, and without bombs. The official excuse for the delay in starting was apparently that they were waiting for orders from the Governor of Paris—who, good man, was probably in bed and asleep.

#### A Lesson All Round.

Apparently, the military people in France are beginning to distinguish between the aviators of the front and the aviators of the rear, but it would be a good thing if all this humbug and graft could be wiped out by exposure in the French press. It is even worse in its effect than British stupidity and indifference, for a "fumiste"—or "hot-air merchant," as a friend of mine neatly translates the expressive French word—does more harm than a mere blockhead, just as well-meaning fools do more harm than clever knaves—especially if the knave is clever enough to know that honesty is the best policy, apart from any question of morality.

Anyhow, the story of the "Escadrille de Paris" is not without its usefulness, and it should show our people on this side what to guard against, in the way of lack of readiness for immediate action, though happily our various guard squadrons are free of "fumistes" and "embusqués," being composed chiefly of officers who are swearing even worse than the Army in Flanders because they are not in Flanders themselves, and they are only likely to get into trouble through being too anxious to distinguish themselves.

Still, this little story also has its moral for those who care to search for it.—C. G. G.

#### More Airship Dreams.

The following remarks in "The Observer" by "C. W.," the frequently excellent "locum tenens" for Mr. C. C. Turner, may entertain readers who have read Mr. MacMechan's effusions in the American Press:—

It is difficult to "place" Mr. Thomas R. MacMechan. Early in the war he tried to impress the world with his accounts of the big fleet of German airships that were ready to invade England and France. Now he asserts in the American Press that this country is building small rigid airships for defence against Zeppelins. He says these ships—there are to be five—are to cost £20,000 each. They are to have one torpedo-gun firing a projectile 1,600 feet point blank, and are to be manned by a crew of eight and equipped with wireless. They will be 230 feet long and 28 feet in diameter, and will be driven by two engines aggregating about 200 h.p. They will carry a ten hours' load of fuel. The gas-container will be in fourteen compartments, and will be encased in wood.

Unfortunately, the calculation exhibits ignorance of aero-

nautics. An airship of the dimensions stated would have a capacity of not more than 120,000 feet and a lift of about 8,000 lbs.—certainly less than 4 tons. But less us say a lift of 4 tons. Now, the airship itself, minus engines, would weigh 3 tons; an airship on the rigid principle even of this small size could not be built lighter. It is not without reason that the smallest airship Count Zeppelin built was over 400 feet long, and that one weighed 9 tons. Well, now, let us put in the indispensable load, and see where it leads to—

	Weight.
Airship—3 tons—about .....	6,600 lbs.
Engines .....	1,200 lbs.
Crew of eight ... ..	1,200 lbs.
	9,000 lbs.

and nothing left for fuel and oil, gun, ammunition, wireless and accessories! What is the object of stating that airships with these impossible characteristics are being built?

C. W.

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## Naval and Military Aeronautics.

### GREAT BRITAIN.

From the "London Gazette," March 30th, 1915.

ADMIRALTY, MARCH 27TH.

ROYAL NAVAL AIR SERVICE.—Proby, flight sub-lieuts. confirmed in rank of flight sub-lieut.: G. E. Livock. October 27th. W. S. Newton-Clare. October 30th. W. G. Moore. November 16th. C. B. Dalison. November 6th. T. V. Lister. November 20th. P. Legh. November 30th.

Acting flight lieuts. confirmed in rank of flight lieut.: J. R. W. S. Pigott. July 1st. C. M. Murphy. November 20th.

Acting Flight Comm. F. K. McClean confirmed in rank of flight comm. February 2nd.

WAR OFFICE, MARCH 30TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Equipment Officers.—Sec. Lieut. A. Huggins, S.R., and temp. capt. February 16th. March 1: And temp. capt.—Lieut. L. S. Metford, S.R., Qmr. and Hon. Lieut. F. H. Kirby, V.C., Qmr. and Hon. Lieut. A. Fletcher. March 8: Capt. D. G. Conner, R.A., Capt. G. B. Hynes, R.A., Capt. A. Christie, R.A., Capt. K. P. Atkinson, R.A., Lieut. R. H. Verney, A.S.C., and temp. capt., Capt. B. E. Smythies, R.E. Lieut. H. C. Barber, S.R., and temp. capt. March 18th.

Assist. Equipment Officers. January 16th: Lieut. J. T. C. Moore-Brabazon, S.R.; Sec. Lieut. the Hon. E. A. Stonor, S.R.; Sec. Lieut. G. C. R. Mumby, S.R.; Sec. Lieut. N. Goldsmith, R.A.; Sec. Lieut. S. C. Callaghan, S.R. Sec. Lieut. L. M. Wells Bladen, S.R. January 19th. Temp. Lieut. A. C. S. Couldwell, 15th H.L.I., and removed to General List, New Armies. February 1. Sec. Lieut. T. V. Smith, S.R. February 2nd. Sec. Lieut. R. B. Bourdillon, S.R. February 13th. March 1st: Qmr. and Hon. Lieut. W. J. D. Pryce, Qmr. and Hon. Lieut. J. Ramsay, Qmr. and Hon. Lieut. J. Starling, Qmr. and Hon. Lieut. A. Levick, Qmr. and Hon. Lieut. A. H. Measures, Qmr. and Hon. Lieut. F. H. Unwin, Qmr. and Hon. Lieut. J. H. Wilford, Qmr. and Hon. Lieut. W. R. Bruce, Sec. Lieut. R. Orme, S.R., Sec. Lieut. F. Jolly, S.R. March 10th: Lieut. A. M. C. Scott, 21st London (1st Surrey R.), T.F., Sec. Lieut. J. E. Storey, S.R.

From the "London Gazette," April 2nd, 1915.

ADMIRALTY, MARCH 30TH.

ROYAL NAVAL AIR SERVICE.—Granted temporary commission as flight lieut.: J. Dunville, March 30th.

WAR OFFICE, APRIL 2ND.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Assist. Equipment Officers: Sec. Lieut. H. E. Chaney, Lancs. F. February 15th. Sec. Lieut. G. C. Gold, S.R. March 21st.

### NAVAL.

The following appointments were announced at the Admiralty on March 31st:—

ROYAL NAVAL AIR SERVICE.—Mr. C. H. Meares granted a temporary commission as lieut. comm., R.N.V.R., and appointed to the "President," additional, for R.N.A.S., to date March 30th.

The undermentioned have been granted temporary commissions as lieut., R.N.V.R., and appointed to the "President," additional, for R.N.A.S., to date as stated; F. A. Bumpus, March 1st; F. H. M. Savile, C. Suckling, H. Dodd, H. W. Trefusis, P. Garton, P. L. R. Fraser, A. G. Innes, B. H. N. H. Hamilton, G. McAlpine, E. R. Peal, J. W. Collinson, J. S. E. Townsend, and R. J. P. Briggs, to date March 30th.

Sub-Lieut. W. S. Galpin promoted to the rank of lieut., with seniority March 30th.

Mr. John Dunville granted a temporary commission as flight lieut., and appointed to the "President," additional, for R.N.A.S., to date March 30th.

Mr. J. P. Coleman entered as probationary flight sub-lieut., and appointed to the "President," for R.N.A.S., to date March 19th.

Temporary Sub-Lieut., R.N.V.R., K. C. Cleaver transferred to R.N.A.S. as probationary flight sub-lieut., and reappointed to the "President," additional, for R.N.A.S., to date March 30th.

Mr. E. S. C. N. de Grey promoted to the rank of temporary sub-lieut., R.N.V.R., and appointed to the "President," for R.N.A.S., to date March 29th. [An obvious mistake.—Ed.]

\* \* \*

The following appointments were announced at the Admiralty on April 1st:—

ROYAL NAVAL AIR SERVICE.—P. L. R. Fraser granted temporary commission as Lieutenant R.N.V.R., and appointed to "President," additional, for R.N. Air Service, to date March 30th.

Chief Petty Officers E. S. Cripps and N. de Grey both promoted to temporary sub-lieutenants, R.N.V.R., and appointed to "President," additional, for R.N. Air Service, to date March 29th.

\* \* \*

The following appointments were announced at the Admiralty on April 3rd:—

ROYAL NAVAL AIR SERVICE.—Temporary Lieuts.: F. Charles and H. C. Sinclair promoted to the rank of temporary lieut.-coms. R.N.V.R., with seniority, March 31st.

Messrs. C. J. Galpin and W. Tesh entered as probationary flight sub-lieuts. and appointed to the "President," additional, for R.N.A.S., to date March 30th.

Chief Petty Officers: T. R. Grey, J. H. Lee, and B. J. Turner granted temporary commissions as sub-lieuts. R.N.V.R., and appointed to the "President," additional, to date March 31st.

\* \* \*

The Secretary of the Admiralty made the following announcement on April 1st:—

The following report has been received from Wing Com.

A. M. Longmore, R.N.:—

I have to report that this morning Flight Sub-Lieut. Frank G. Andreae carried out a successful air attack on the German submarines which are being constructed at Hoboken, near Antwerp, dropping four bombs. Also Flight Lieut. John P. Wilson, whilst reconnoitring over Zeebrugge, observed two submarines lying alongside the Mole, and attacked them, dropping four bombs with, it is believed, successful results. These officers started in the moonlight this morning. Both pilots returned safely.

\* \* \*

Vacancies exist for men in different branches of the Royal Naval Air Service. On the completion of a short course of training opportunities will occur in many cases for proceeding on active service.

Selected candidates, who must be from 19 to 35 years old and able to pass the usual naval medical tests, will be graded according to suitable ability, and previous experience, from the rank of air mechanic, second class, up to the rank of petty officer, with pay varying from 4s. to 6s. per day, and separation allowances on the new increased scale.

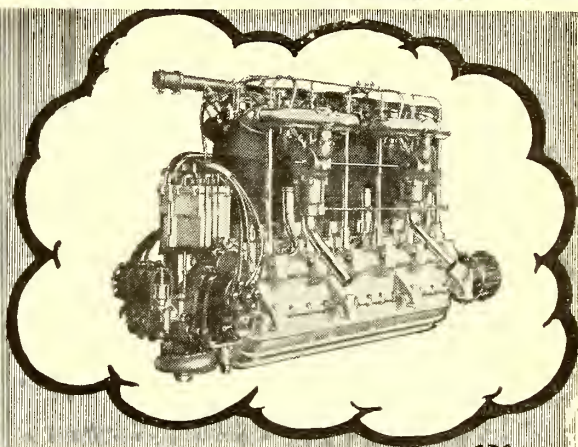
Men with experience of a suitable trade should have no difficulty in obtaining the rate of A.M.1 at 4s. per day. Personal application should be made to the nearest Royal Naval recruiting office, or to the Royal Naval Air Service recruiting office at the London Aerodrome, Hendon, N.W.

\* \* \*

Mr. F. W. Riggall, ex-Mayor of Grimsby, received notification on March 31st from the Secretary of the Admiralty that his son, Flight Lieut. E. Gordon Riggall, of the Royal Naval Air Service, has been killed in action. Lieut. Riggall took part in the raid on Ostend on February 16th, and was reported missing. Inquiries and information given by flying officers now British prisoners have satisfied the authorities that he was shot down and killed while returning from this exploit.

Lieut. Riggall was the first Grimsby youth to secure a pilot's certificate and a commission in the R.N.A.S. He had recently been commended for a reconnaissance over the Belgian littoral made during a storm in January last and for a flight over Zeebrugge on February 12th, when bombs were dropped which damaged the German submarine works and power house. Lieut. Riggall was well known and highly popular in Grimsby, and much sympathy is expressed with Mr. and Mrs. Riggall.

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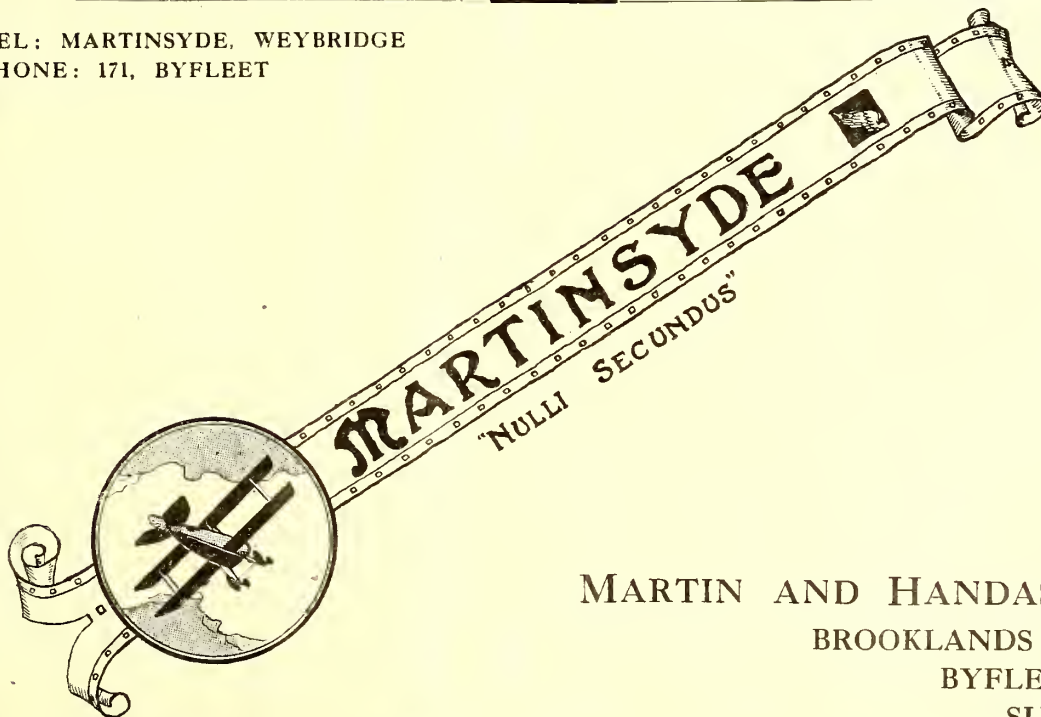
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Lieut. John Dunville, R.N., whose appointment to a temporary commission is notified, is famous as a balloonist and as one of the earliest members of the Royal Aero Club, of which he has been a member of Committee practically since the formation of the Club. At various balloon competitions he has been a successful and skilful competitor, and has supported the Club's funds generously on all occasions, besides presenting a valuable cup for a balloon competition. Mrs. Dunville is also a keen balloonist. At the aviation meetings promoted by the R.Ae.C. Mr. Dunville has been a valuable and hard-working official, whose tact and good nature has smoothed over many difficulties.

His long experience of ballooning is now being turned to good account for the instruction of young officers of the Naval Airship Section in the elements of their profession.

#### MILITARY.

The following passage in the descriptive account which has been communicated by an Eye-Witness present with General Headquarters continuing and supplementing the narrative published on March 28th, relates to aircraft:—

March 30th.

Of incidents the following are alone worthy of record: On Friday (the 26th) five bombs were dropped on Essars from a German aeroplane, one man being wounded. Saturday, the 27th, was also marked by activity of the enemy's aviators, who dropped bombs on Sailly, killing two men. A Zeppelin was seen at night heading north-eastwards. On Sunday, the 28th, bombs from German aeroplanes were dropped near Estaires and Hazebrouck, with but small results in each case.

\* \* \*

The following passage in the descriptive account which has been communicated by an Eye-Witness present with General Headquarters, continuing and supplementing the narrative published on the 31st ult., deals with aircraft:—

April 2nd.

The last three days of March passed quietly. On Monday, the 29th, there was an exchange of shell fire round Ypres. During the night several hostile aeroplanes flew over our lines. Bombs were dropped on Bailleul and near Estaires and Merville, without, however, doing any damage. On Tuesday some bombs were dropped near Bethune, but no casualties were caused.

\* \* \*

The following appeared in the Obituary Columns on March 30th:—

**MULLINS.**—On March 29th, at the Royal Flying School, Up-avon, as the result of an aeroplane accident, Sec. Lieut. John Ollis Mullins (6th Middlesex Regt.), youngest son of the late E. Roscoe Mullins, sculptor, aged twenty-three.

Mr. Mullins was born in London on March 5th, 1892, and took his certificate, No. 1115, on a Maurice Farman at the R.F.C. School at Shoreham on March 13th, 1915.

A verdict of "Accidental Death" was returned at the inquest at Tidworth on March 31st on the body of the deceased officer who died in Tidworth Hospital on Monday.

Captain Brock, of the Royal Flying Corps, said that Lieut. Mullins and an instructor, Flight Sub-Lieutenant Perry, R.N., were about 100 feet up in a Maurice Farman when he saw it sideslip and fall to the ground. Sub-Lieutenant Perry, who was seriously injured, was still unconscious at the time of the inquest.

\* \* \*

The Casualty Lists issued on March 30th included the following:—

#### WOUNDED.

Conran, Capt. E. L., 21st Lancers and Royal Flying Corps.

Mansfield, Capt. H. M. L., Royal Field Artillery and Royal Flying Corps.

\* \* \*

Captain Conran was mentioned in dispatches for gallantry in the early part of the war and was promoted from Flying Officer to Flight Commander and Temporary Captain. He was, in addition, given a commission in the 21st Lancers from the Westminster Dragoons (Yeomanry) and appointed to the Distinguished Service Order. He was also awarded the Cross of the Legion of Honour.

He was very largely responsible for discovering the sudden movement of large German forces which nearly overwhelmed the British Expeditionary Force near Mons in its first week of active service.

\* \* \*

The following appeared in the Casualty List which was published on April 2nd:—

PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONERS OF WAR.

Sec. Lieut. M. R. Chidson, Royal Garrison Artillery and Royal Flying Corps.

Sec. Lieut. T. E. H. Davies, King's Royal Rifle Corps and Royal Flying Corps.

Lieut. G. N. Humphreys, Royal Flying Corps.

Lieut. G. W. Mapplebeck, King's (Liverpool Regiment) and Royal Flying Corps.

Sec. Lieut. D. C. W. Sanders, Royal Field Artillery and Royal Flying Corps.

\* \* \*

The following appeared in the Casualty List issued on April 3rd:—

#### WOUNDED.

Lieut. C. H. Stringer, 5th (Royal Irish) Lancers and Royal Flying Corps.

#### ACCIDENTALLY KILLED.

ROYAL FLYING CORPS.—1st Class Air Mechanic W. Barker, 534; Corpl. A. Bowyer, 582; 1st Class Air Mechanic G. Cook, 589; Flt. Sergt. J. Costigan, 194; 2nd Class Air Mechanic A. Cuff, 1192; 1st Class Air Mechanic A. Morgan, 872; 1st Class Air Mechanic S. Tugwell, 1934.

\* \* \*

Further reports confirm the statement that the late Captain Cholmondeley, who was officially reported as "Killed," and not as "Accidentally Killed," did in fact come by his death through the explosion of a bomb which was being loaded into his machine, which apparently detonated a number of others, for it is also stated that the mechanics at work on the machine at the same time were killed also.

The names of a Flight-Sergeant, a Corporal and five Air Mechanics are officially given as being "Accidentally Killed," in a list published on April 3rd and dated March 18th, so that these men are apparently the victims of the same accident, which occurred on or about March 12th. One hopes that their relatives, to whom one offers sincere condolences, have not been kept waiting over a fortnight for the news.

It is reported also that two A.S.C. men, who were simply watching the loading of the bombs into the machines, were killed at the same time.

\* \* \*

Many people will be pleased to hear that news has been received of the safety (as prisoners) of four officers reported missing. Shortly after the capture of two of them a German aviator courteously dropped letters written by them into a British landing ground, stating that they were unwounded. Later on a letter of thanks was dropped into a German ground by a British aviator, assuring the German Aviation Corps that the R.F.C. would be pleased to reciprocate their courtesy as often as possible.

From private correspondence it appears that Lieut. G. N. Humphreys, R.F.C., was with his squadron on March 20th, and therefore one may assume that he and Lieut. Davies were captured on the 21st. From this one may gather that the other officers reported as missing and prisoners of war were brought down at the earlier dates mentioned in the German communiqués.

It is stated by a friend unconnected with the R.F.C. that one of the "prisoners" has returned to London, so it may be assumed that he escaped through the German lines.

\* \* \*

Regular readers of THE AEROPLANE may have noticed that the authorities have been a trifle more prompt in publishing R.F.C. casualties since this paper pointed out that the German Headquarters communiqué antedated our official public notifications of R.F.C. losses by anything over a week. It would be presumptuous to assume that the complaint and the improvement are actually cause and effect, but they certainly make an interesting coincidence.

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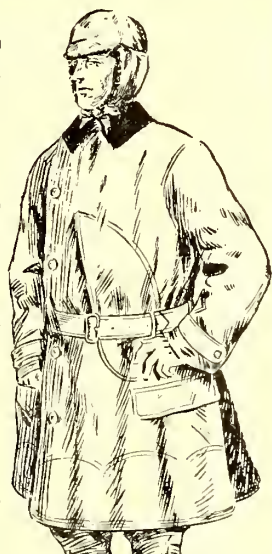
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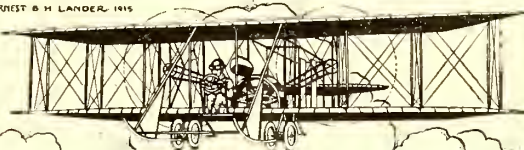
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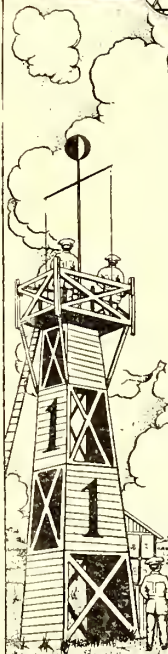
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**FRANCE.**

The afternoon communiqué of March 30th says:—

Yesterday was calm along the front as a whole. A German aeroplane dropped bombs on Reims. Two persons were wounded. One projectile fell on the apse of the Cathedral.

\* \* \*

The French official communiqué of March 31st says:—

Our aviators in the course of flights at night on the 30th dropped twenty-four bombs on stations and enemy bivouacs in the Woevre, in Champagne, in the Soissons district, and in Belgium. In the daytime on the 31st the maritime station of Bruges and the aviation camp of Gits were successfully bombarded.

\* \* \*

The French communiqué of the afternoon of April 1st says:—

The Belgian aviators on the night of the 30th bombarded the aviation camp of Handzaeme and railway junction of Cortemarck.

The night communiqué says:—

To the south of Dixmude Aviator-Lieut. Garros brought down an Aviatik aeroplane by machine-gun fire.

In the region of the Aisne another German aviator was brought to the ground by the French aviator Navarre.

\* \* \*

The French official communiqué, issued on the night of April 2nd, says:—

At 7 a.m., to the east of Soissons, a German aviator was shot down in our lines. This is the third in 24 hours.

A flying squadron has dropped 33 shells on the barracks, the hangars, and the railway station of Vigneulles, in the Woevre. The greater number of the projectiles fell on their objectives. Our aviators were subjected to heavy fire, and at close range, and three of them returned with large holes in their wings, whilst others received bullets and shrapnel in their fabric. None of the aviators was hit, and all the machines returned without mishap.

The communiqué issued on the afternoon of April 2nd states:

French and Belgian aeroplanes dropped about thirty bombs on the aviation camp of Handzaeme.

\* \* \*

The French official communiqué, issued on the afternoon of April 3rd, stated:—

The German aeroplane which was brought down yesterday morning had just dropped bombs on Reims. The machine caught fire on touching the ground, but the two aviators were unhurt and were taken prisoners.

The French official communiqué of April 5th says:—

The French military authorities have received precise information of the result of the bombardment carried out in Belgium on March 26th by British military aircraft. These results are as follows: An airship shed at Berghem-Sainte-Agathe was seriously damaged, as was the airship in the shed.

At Hoboken the Antwerp shipbuilding yard was set on fire and two submarines were destroyed, while a third was damaged. Forty German workmen were killed and sixty-two wounded.

[The reference to "military" aircraft is evidently an error for "naval," unless R.F.C. pilots went to Berghem while the naval pilots went to Hoboken.—Ed.]

\* \* \*

The "Daily Telegraph's" correspondent at Boulogne reported on March 30th that the approach of a Zeppelin was signalled on Saturday evening (March 27th), but, thanks to the vigilance of the Allies' aviators, she had to abandon her nocturnal voyage and returned towards the German lines.

Towards eight o'clock on the morning of the 30th a Taube flew over Cassel, and dropped six bombs. The overhead wire and a tramcar were slightly damaged. The aeroplane then passed over Hazebrouck and Bailleul.

It is reported that the Academy of Sports has decided, on the suggestion of the Ministry of War, on the advice of General Joffre, to award its Grand Prix to the Military Aviation Department, in recognition of the part it has played in the national defence.

In view of what the Department, as such and distinct from the civilian pilots, has done, the idea is humorous.

\* \* \*

It is reported that a Zeppelin appeared over Bailleul about 2 a.m. on March 31st. It dropped two bombs, which fell in the fields without doing any harm, and then disappeared in the direction of Armentières.

A Zeppelin was seen during the night of the 27th-28th near the Belgian border. It was pursued and driven off by Allied aviators.

\* \* \*

A message from Béthune dated March 31st says that a German aeroplane was brought down on March 30th near Poperinghe by gunfire. The machine was destroyed and the aviators were killed. Another aeroplane flew over Béthune and threw four bombs, which only did damage to property.

Some Taubes also dropped about fifteen bombs on Merville and Estaires. They injured nobody, but broke some windows. They were pursued by French aviators.



A genuine "Taube" captured by the French, on view at the Esplanade of the Invalides in Paris.



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**GERMANY.**

The German official report of March 31st says:—

Yesterday hostile aviators bombarded Bruges, Ghisteltes, and Courtrai without causing military damage. Near the hospital of Courtrai one Belgian was killed and another was wounded.

\* \* \*

A Berlin telegram states that a hostile aviator appeared above Mülheim (Baden) at 5.30 p.m. on April 1st, dropping bombs and causing material damage. At 7 p.m. an aviator dropped three bombs on Neuenburg (Rhine), causing little material damage.

\* \* \*

The "Frankfurter Zeitung," April 3rd, states that a hostile aviator dropped several bombs on Villingen on April 2nd at 4 p.m., and that one bomb fell just behind a passenger train. The journal adds that the damage done to persons and to material property has not yet been ascertained.

**RUSSIA.**

An official communiqué issued at Petrograd on March 31st says:—

Fog in the region of the Bosphorus on March 29th, 30th, and 31st prevented our warships from continuing the bombardment.

In spite of a very sharp fusillade our aviators dropped bombs from seaplanes.

\* \* \*

The following semi-official statement was issued at Petrograd on March 31st:—

"Near Jedwabno (north of the Narew) we brought down an enemy aeroplane which fell between the opposing lines of trenches. The aviators, both the officer and his mechanic, were taken prisoners.

"During the last few days the German aeroplanes have shown great activity. Near Ostrolenka, on March 29th, 15 enemy aeroplanes aimed as many as 100 bombs on an isolated house, which they probably thought was the Russian Headquarters. Not a single bomb struck the house, of which the inhabitants are all safe."

**BELGIUM.**

The "Tyd" states that on Saturday, March 27th, five of the Allies' aviators made an attack on the aerodrome at Igteghem, near Thourout, where many troops are stationed. About 30 soldiers were killed and 60 wounded. The latter were conveyed to Thourout.

At 5.30 a.m. on the 30th an aviator dropped five bombs on the dock near Bruges, where the German submarines lie after their raids. The effect of the bombardment is not known. [Or is it where the crews "lie" after their raids?—Ed.]

\* \* \*

The "Nieuwe Rotterdamsche Courant" learns from Sluis that on March 30th British aviators flew over Zeebrugge, dropping several bombs. It is not known whether they did any damage. They were fired upon all along the coast.

\* \* \*

Mr. Philipps of the "Express" reported on March 31st:—  
"The German naval staff at Zeebrugge is showing greater caution in sending out submarines. They now employ Taubes to make flights at regular intervals over the North Sea, and on returning signal their reports to a captive balloon of the Parseval type at Ramscapelle. [Further explanation of the modus operandi would be appreciated.—Ed.]

"The Allies' aeroplanes made an attack on the balloon station on Monday, but the enemy succeeded in averting it in time.

"Four German aeroplanes made several flights from the Ramscapelle observation base and subsequently flew over our warships. One was brought down, but it is not known whether it was by the Allies' shrapnel or through an accident. The pilot and the observer were both killed and the machine wrecked on the dunes.

"During the clear and windless weather of yesterday many opposing aircraft were seen circling above the coast and were plainly visible from the frontier."

\* \* \*

A Central News Agency telegram from Amsterdam, dated

March 30th, was published by the "Daily Express" on March 31st, ostensibly as an item of news:—

"Aeroplane Base in the Air.—According to dispatches from Sluis, a German captive balloon shaped like a Zeppelin has been visible from Sluis since early this morning, stationed apparently alongside the canal from Lisseweghe to Oostkerke. Several German aeroplanes appear to be using the captive balloon as a kind of base from which they go reconnoitring, and to which they return at intervals."

[It is improbable that the balloon was a Zeppelin, for airships of that type are not inflated with hot air.—Ed.]

\* \* \*

The "Handelsblad," Amsterdam, April 1st, learns from Sluis that at 9.30 p.m. on March 31st a heavy bombardment by British warships was opened upon the north Belgian coast. At 6 a.m. on April 1st, British aviators reconnoitred the coast to ascertain the results of the bombardment, which was directed against Zeebrugge and the aviation camp between Lisseweghe and Zeebrugge near the canal.

\* \* \*

It was reported from Amsterdam on April 3rd that in the latest aviation raid over Hoboken by the well-known Belgian aviator, Olieslagers, over thirty people were killed.

\* \* \*

The "Telegraaf," Amsterdam, April 4th, learns from Turnhout that a British aviator has been forced to land between Malines and Herenthals, and was captured by the Germans.

Allied aviators reconnoitring over Flanders dropped some bombs in the direction of Aalter and Thielt.

\* \* \*

Mr. Charles Peacock, an Englishman, of more than military age, who has been in Antwerp since the beginning of the war, and has been permitted by the German authorities to leave, has arrived in London, and has given some particulars of the British air raid at Hoboken on March 24th. He said he saw four aeroplanes arrive about 7 a.m. and make the attack. The aeroplanes were flying at a height of about 1,500 metres, but they were very much lower when they dropped the bombs on the shipyard at Hoboken. The explosions were very severe. Although no one is allowed in the vicinity of the shipyard, it is believed in Antwerp that four submarines which were ready to be launched were destroyed by the British bombs. Sixty-eight German soldiers are said to have been killed by the bombardment.

\* \* \*

The Sluis correspondent of the "Telegraaf," Amsterdam, April 2nd, learns that the Allied aviators are again displaying great activity in Flanders. They attacked and damaged the railway line between Ghent and Dixmude, near Zarren and Cortemarck.

**HOLLAND.**

"Reuter, via Amsterdam, reported on March 31st that a telegram from Constantinople, via Berlin, said:—

"The Allies' Fleets have resumed the bombardment of the villages near the outer forts of the Dardanelles. Enemy airmen are reconnoitring daily."

[Despite its circuitous route the message bears the impress of truth.—Ed.]

\* \* \*

Mr. Feibelmann of the "Express" reported from Holland on the 31st as follows:—

"Reports are published to-night that a number of Zeppelins have been seen to the north of the island of Vlieland, flying towards England.

"During the last few days the sky above Holland has been thick with German airships, aeroplanes, and seaplanes, while the waters around Holland are sown with a cordon of warcraft, as is proved by the reports of a number of Dutch trawlers and fishing smacks which have returned for the Easter holidays.

\* \* \*

The skipper of the steam trawler "Hibernia," of Ymuiden, reported that on the 29th, whilst fishing 54 degrees 16 north and 5 degrees 30 east, a German seaplane carrying a crew of

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three and marked No. 79 flew over the ship, and without warning threw a bomb which fell within 20 yards of the trawler and exploded, fortunately without doing any damage.

This, the captain added, was not the only evidence of German aerial activity in the North Sea, for some time later two Zeppelins were seen coming from an easterly direction, one being marked Lg.

#### AUSTRIA.

According to a message received in Copenhagen from Vienna, Lieut. Stanger, who was one of the last aviators to leave Przemyśl before its surrender, states that General-Kusmanek showed him, just before he left, a telegram from the Emperor, who recommended the general to surrender the fortress.

\* \* \*

An Austrian officer-aviator, telling of the siege of Przemyśl, is reported to have said: "During the siege we lost twelve aeroplanes, and seven pilots and seven officers who accompanied them as observers were shot down. We do not know if they were killed or taken prisoners. In the last hours only two machines were available in the fortress. Early in the morning shrapnel began to fall around us, and we had to leave if we wanted to save the aeroplanes and ourselves from falling into the enemy's hands."

#### ITALY.

Sub-Lieut. Giuseppe Pezzighini, apparently by not being able to cut off the ignition, was killed on March 29th at Mirafiori, when flying a 50-h.p. Gnome Blériot. The machine came down piqué at full speed.

To judge from the official communiqué the pilot might have become faint or dazed. He had been flying round the aerodrome for some time, and was nearly ready to pass for his higher military brevet, having been under instruction at the "perfection course" for some months.

\* \* \*

Considerable numbers of the F.I.A.T. 6-cyl. 100-h.p. engines are on order for the Aeronautical Corps. That worthy rotary the L.U.C.T. has now become a recognised feature on army aeroplanes, and none too soon.

\* \* \*

A little bird, who usually sings quite in tune, informs me that after all the Caproni 300-h.p. is not to be added to the three builds on which the Italian Government seems to be pinning its faith for the future emergency. So that, while the Savoia Company are working as hard as they can, and both the Blériot concessionaires and the Macchi Co. of Parasol and Nieuport fame are fully occupied, the ex-Caproni works at Malpensa are not to be used for any more constructional work. Experimenting and building work connected with it will of course go on there as before. This will be, no doubt, more congenial to the staff than merely reproducing numbers of machines of a similar type.

T. S. HARVEY.

#### TURKEY.

It is reported that on or about March 29th the following communiqué was issued by the Turkish headquarters:—"Yesterday one of our seaplanes dropped bombs on a British warship cruising outside the Dardanelles."

The "Daily Express" correspondent at Athens has received the following details of the incident:—"One aeroplane flew over the ships of the Allies and threw two bombs, which fell in the sea. The machine then flew at a great height over Tenedos, and was out of range of anti-aircraft guns. British aviators went up in pursuit, and chased the enemy through the air to the Gallipoli Peninsula, and then returned to their base at Gallipoli. As a consequence, no doubt, of this aerial reconnaissance by the Turks the warships of the Allies left Tenedos in the evening, and were joined at sea by a French squadron."

\* \* \*

The Rome correspondent of the "Petit Journal" forwards an Athens telegram, stating that the authorities have expelled all newspaper correspondents from Tenedos. Just before leaving the journalists witnessed a fight between two German aeroplanes and four British. The Germans, who were above the British, threw down bombs which missed, and finally the enemy aviators were put to flight.

[Reuter reports the fight as a "duel."—Ed.]

#### SERVIA.

It is reported from Bucharest (April 2nd) that an Austrian aeroplane having thrown a couple of bombs on the Serbian village of Glabova, the Serbian batteries at Tekia opened a vigorous fire on Orsova, destroying a number of buildings. The Serbian commandant has informed the Austrians that this will be repeated in the event of any more aeroplanes attacking Glabova.

#### U.S.A.

From the "New York Times," Thursday, March 11th:—

Washington, March 10th.—Two dirigible balloons are to be bought for the American Navy. They will not be as large as Zeppelins, nor will they be of the rigid type. Bids for the dirigibles will be advertised for within a week. They are to be bought from the lump sum appropriated by Congress for naval aeronautics, and are to be used for practice.

Secretary Daniels to-day conferred with Secretary Garrison and Dr. C. D. Walcott, secretary to the Smithsonian Institution, on the organisation of the National Advisory Committee for Aeronautics, which was ordered to be established by a provision in the new Naval Appropriation Bill. The committee is not to exceed 12 members, to be appointed by the President.

From the "N.Y. Times," Wednesday, March 17th:—

Los Angeles, Cal., March 16th.—Frank Sittes, an aviator, while flying here at 5 o'clock this afternoon, ran into an air pocket, lost control of his machine, and fell 150 ft. to his death. Sittes was employed by a film company in the making of a war scene. He was instructed to drop bombs from the biplane upon fortifications. It was while performing this feat that the accident happened. Sittes was to give an exhibition at the dedication of a so-called motion picture City yesterday. Twice he attempted a flight over the heads of thousands of spectators, but lost heart, and brought the machine to earth. Later, he made the flight successfully. He had been circling gracefully for about 25 minutes this afternoon, when suddenly the machine turned downwards, and he plunged to earth. He was hurried to the hospital near by, but was dead before he reached there. He is survived by a wife and 3 children.

#### CANADA.

Canada provides very little else but amusement as usual.

From the "Daily Intelligencer," Belleville, Ont.:—

Aeroplane Visits Worry Kingston. 3 Last Week, and Another Yesterday. "Sinister End in View."

Kingston, Ont., March 16th.—During the past 4 days four aeroplanes have been seen operating in this district. Last Friday three were seen operating over Lake Rideau, and yesterday afternoon another one was discovered in the same place flying towards Kingston. As there are no aeroplanes of the Militia Department in this vicinity, those which have been seen flying about here are thought to have some sinister end in view, either the destruction of property or the surveillance of the troops now in training here for overseas service.

From the Calgary "Daily Herald," Ottawa, March 13th.—The Dominion police are at present investigating reports which have been received from time to time from different points to the effect that aeroplanes have been seen flying above Canadian territory.

From the "Daily Gleaner" (Fredericton, N.B.)—St. John, March 16th: Lieut.-Col. Armstrong has received orders to recruit volunteers for an aviation corps. No details are given of the plans of the corps.

From the "Daily British Whig" (Kingston, Ont.)—Kingston, March 17th: Corporal Eugene de Boliac, of the Eaton Motor Machine Gun Battalion, Toronto, is the first aviator to respond to the British War Office's call to aviators in Canada to volunteer for service at the front. He is a Swiss, and has flown for Blériot, De Lesseps, and Curtiss.

#### INDIA.

From "The Englishman," Calcutta, Weekly Summary:—

Bombay, February 13th.—Large crowds witnessed an hydroplane (sic) flight in the Bombay Harbour last evening. The machine was fixed up yesterday in the Alexandria Docks, and was taken out for a trial trip from the Harbour. Another machine has also been set up, and will probably be tried this evening. The machines were brought out from home in parts by the mail steamer "Persia."

### The Death of Mr. Mahl.

All connected with aviation will learn with deep regret that Mr. Victor Mahl, the pilot of the Sopwith seaplanes, died at Southampton on Friday last (April 2nd), after an operation for appendicitis. He was out flying on the Monday, but did not feel well. On Tuesday he was better and went flying again, but was taken seriously ill next morning. He was operated upon on Thursday and died on Friday. He leaves a widow, to whom all will extend the most sincere sympathy.

Victor Mahl was born on October 28th, 1889, in London, and took his certificate, No. 784, on a Sopwith tractor biplane at Brooklands on May 14th, 1914. He quickly proved himself a first-class pilot, taking up several passengers the very day he passed for his certificate. Thereafter he became the regular test pilot of the firm, and has for months past been busily employed passing Sopwith machines through their tests for the Government, frequently testing several in a day.

His unflinching cheerfulness, ready wit, and keenness in all he undertook endeared him to all who knew him, and he will be greatly missed by a large number of friends.

### Flying at Hendon.

On Good Friday took place the first public display since war began. Wind, westerly, blowing up to 30 miles per hour on the gauge, and of a nasty, gusty description. It was obviously unfit for box-kites; nevertheless, at 3.30 p.m., Mr. Osipenko made a plucky straight and received a bad shaking. At 4.30 Mr. Graham, wonderfully improved as a pilot, made a truly fine flight on "Lizzie," which he handled in really splendid style till the rain came down and stopped proceedings. About 6 p.m. Mr. Hawker appeared from Brooklands on an 80-h.p. Sopwith tractor, and, having made the journey in something under quarter of an hour, remained circling above the aerodrome to fill up his hour's test.

On Saturday it was a case of Rain! Rain! and Rain!!!

On Sunday it was bright, but there was still a nasty wind of 20-30 m.p.h. At 3.15 Mr. Osipenko, the Russian pilot, better known as Mr. Russell, on a G.-W. school biplane, went up. Thereafter there were frequent box-kite flights. The first public appearance of the 70-h.p. Gnome G.-W. "pusher" biplane, showed that it flew very well, and has fine climbing powers. Mr. Graham on "Lizzie" made three flights, including several excellent spirals and nose-dives. Mr. Manton, the Grahame-White school's chief instructor, had the 70-h.p. G.-W. up on and off till dusk, carrying passengers.

There was a good attendance, and to judge from appearance of the crowd, the move of admitting soldiers and sailors in uniform without charge proved a good one.

On Bank Holiday, though it was somewhat overcast, there was but the lightest of breezes. Something like the Bank Holiday crowd of olden times was present, the cheaper enclosures being densely packed and cars quite numerous.

At 2 p.m. M. Baumann, of the Baumann-Ruffy School, made good flights on 60-h.p. Caudron. Box-kites rose to the unaccustomed altitudes of 1,200 and 1,500 feet. Mr. Winter (promising flier), Mr. Manton, Mr. Osipenko, and Mr. Barrs,

now pretty well recovered from his smash in France, were all out.

The 70-h.p. G.-W. flew with a passenger over the Welsh Harp. Mr. Graham on "Lizzie," Mr. Manton on the 70, with many successive passengers, and, finally, Mr. Roche-Kelly, of the Beatty School, on a Wright, did some excellent flying.

At 5 p.m. there was an impromptu private race for six laps. Messrs. Barrs, 1st; Osipenko, 2nd; Graham, 3rd, and Manton, 4th, finishing in that order, thirty seconds separating 1st and 2nd, and 7 seconds between 2nd and 3rd. In commemoration, Mr. Barrs received a silver medal, and the others bronze medals.

Late in the afternoon, Mr. Manton took the new 100-h.p. G.-W. tractor biplane out for a test, rounding the pylon course at about ninety miles an hour.

These displays will take place throughout the spring and summer seasons every Thursday, Saturday, and Sunday afternoon. The feature of the Easter Holiday displays has been the large number of officers and men of the Navy and Army who visited the Aerodrome, and took a keen interest in the various types of machines. All Service men in uniform are admitted to any enclosure without charge, and the management will be glad to offer them facilities for the close inspection of machines when possible.

The Aerodrome would make a very interesting call during a route march, and C.O.'s are invited to communicate with the Secretary, who will make the necessary arrangements.

It is to be hoped that the management will set their faces sternly against organised racing, as it is desirable, at present, to keep the tone of the aerodrome superior to that of the common race-course or football field, though it is well to admit the public—and especially men of the Services—so that they may be educated to the great weapon of the future.

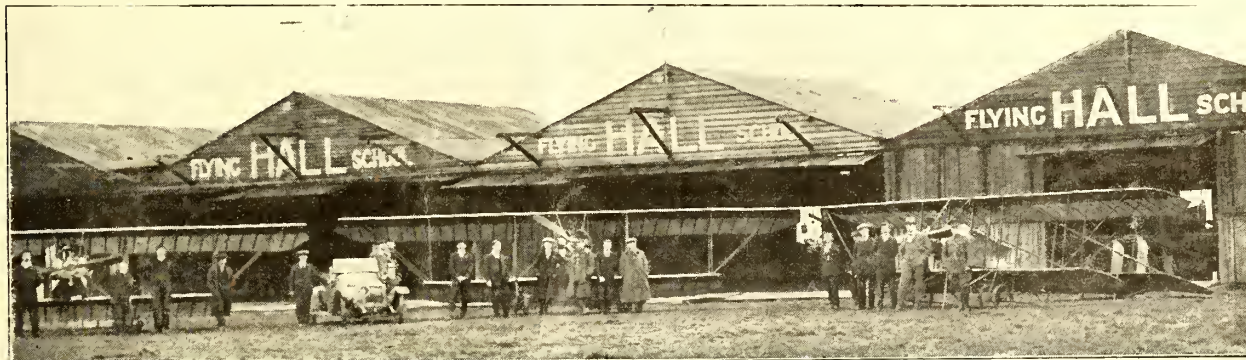
### Lessons of History.

A correspondent writes:—

"Has it struck you that countries generally win and lose their wars alternately? I suppose this is due to the fact that the winner of one war becomes over-confident whereas the loser rectifies his errors. Thus France beat Prussia in 1806 but was defeated in 1812-1815. Turkey beat Greece in 1896 but was beaten in 1912. Russia lost her last war but will win this one. France had some great successes in the early days of Napoleon III, but was badly beaten in 1870. One cannot include Prussia's victories of 1864, 1866 as they were against weak nations, but it is reasonable to assume that Germany, having been victorious in 1870, defeated in 1915, will win her next war.

"Therefore it behoves us to be careful and keep well armed. It is not likely that Germany will repeat her present mistakes, but it is likely that we shall go to sleep again. Moral: build plenty of aeroplanes."

The remarks quoted above deserve to be remembered for reference after the war is over, for there is sure to be a strong effort made by a certain section of the people of the country in favour of a reduction of armament, whereas our true course would be to maintain our Navy and Army at full strength—and add a very strong Air Service.



The Hall School, and its Caudron Biplanes, at Hendon.



## Aero-motors: In Kind and Construction.—(Continued)

BY GEOFFREY DE HOLDEN-STONE.

### Valve Trueing.

So long as the fundamental necessity of lining up the rockers in absolute truth with the crank-axis is borne in mind, it does not matter how often the exhaust-valves are dismantled; for, after all, they are the inspection ports through which only can the internal condition of the motor be kept under observation. Consequently, for better-assured lining-up, two parallel marks should be cut, fairly deep, with a sharp-edged file or graving tool on the topmost fin of each cylinder, at each side of and beneath the rocker pivot-arm formed on the valve-box. If, in addition, a little U-shaped rectangular template, with sharp points, be carefully made to fit over this pivot-arm, so that the points may instantly find the setting marks on the flange, a quick yet accurate valve-mounting is assured in any circumstances: as the pivot-arm and templet can be held in the left hand while the locking-ring is being set home with the right. Obviously these little aids make all the difference to the efficiency of field-service—the true trade of the aeroplane—so setting marks of this kind should be made everywhere on the motor as soon as it has come to its best running. A little lift with the end of any sharp-pointed tool will also suffice to verify the tension of the exhaust-valve springs. For the rest, the lightest imaginable grinding with a creamy paste of crocus powder, petroleum and petrol will keep the valves in good setting.

### As to Inlet Valves.

The care of the inlet-valves, however, is a more delicate affair. Look at them constantly—after every twenty hours' running at longest—but short of obvious necessity, refrain from dismantling or other mechanical interference. In any case, clean them to begin with. For this, make a softish brush of a faggot of thin brass wires, bunched up with a piece of sponge about an inch or so from the bristle ends. Dip this in the petroleum-petrol mixture, and scrub lightly; which will usually be found sufficient to clean the valves unless the previous carburation has been very bad. If the carbonisation products prove too hard set, dissolve a piece of caustic soda as big as a walnut in a pint of petroleum and scrub the valve with the solution, warm. But on no account use any acid, still less any of the much advertised oxygen-flame devices, unless you want to ruin the valve and piston as well. More, take special care to wash out the last trace of the alkaline solution. And, needless to say, in all these valve cleansings, work with the cylinders turned downwards, if not quite vertical, so that the fouled liquid may freely drain out with all the gritty matter; and keep flushing out with a syringe full of petroleum. Use a strong pocket electric light, too, to make sure the valve and its surroundings are absolutely cleansed.

### Valve-Seating Insurance; Also Your Own!

Having done this, the next thing is to see that the valve is seating properly, absolutely gas tight. You will notice a little square hole, countersunk in the centre of the mushroom. Into this place the end of a squared tool—which should be made for the purpose—set in a hand-drill. Now, merely applying a light upward pressure, work the hand-piece of the drill sharply up and down, so as to rotate the valve rapidly. You should hear a full, high swishing note. If this note thins or flattens noticeably, you may rest assured that the valve has pitted somewhere. The book says it must come out to be ground. But, working with the drill and square-pointed tool from beneath upwards into the vertical cylinder, it need do nothing of the kind. Simply cover the seating face of the valve with that crocus-powder-petroleum paste—use your fingers, that were made before other apparatus—and rotate the valve with the drill, washing and repasting, until you get that full, swishing note again. Of course, if it refuses to come, the valve is pitted past saving, and will have to come out and be scrapped. But this only in the last resort. Otherwise refrain from dismantling. *Yet make very sure.* Better a long dismantling job than in the slightest degree chancing a badly seating or leaky valve, with its almost inevitable consequence of a burnt connecting-rod head. For that may well result in a sudden crack somewhere round the gudgeon-pin,

with the freed rod immediately hammering chunks out of the cylinder, and most other kind of hell's delight. You may, of course, get down safe—being, of course, an experienced pilot—with a bumping pancake to finish, by a good imitation of a miracle: but the odds are five to one against the bird. Never forget, then, that the inlet-valve is the Achilles' heel of the Gnome. You will also know when a cylinder is burnt by its turning a delicate brown, just as you know by the cracks when your pet Spode teapot is damaged. The only difference is that you can mend the teapot.

### The Case of the Cylinders.

A slight blueing of the cylinder, however, merely shows that its piston is seizing or about to seize. You will probably be in time to save further hopeless damage because the motor will have begun to forget itself so unmistakably as to force you earthwards in a hurry. You will then have all the time there is to locate the trouble. Take it then; and you will usually find that it is nothing worse than an air-lock in the lubrication; which, *per se*, you already know how to cure. But let the book of directions say what it may, that cylinder must come down and out. This, of course, means "not half" a dismantling job. Therefore do as little as possible. Before taking off the front plate, then, open those little oil-holes, and set in that U-shaped gear-locking tool into them, so that you may press it with your right thumb into two of the rolling-pinion tooth spaces as the plate comes away, and they leave their corresponding gears. This will save time in the re-assembling.

### Their Dismantling.

Otherwise let the valve-gear alone. You must, however, rock the motor slightly, so as to get the locking-nut on the crank-bolt clear between any pair of tappets; and then, having withdrawn the distributing-gear bodily, slack it off with a box-spanner. This will enable you to withdraw the female member of the crank and then its adjacent ball-race, which will enable you to withdraw the wrist-pin and free the connecting-rod in the damaged cylinder. This done, push rod and piston up the cylinder as far as they will go—rocking the motor to get the clearance—and then, rocking this cylinder well over from dead point, you will find it lift clear; when having once got it detached, you can extract the piston and more or less ascertain the extent of the damage.

### Passing the Vet.

We will assume for the moment, that it is not serious. The cylinder will by this time have cooled off—and the motor should without fail have been covered up or otherwise sheltered from any draught and allowed to cool slowly—and you can then note the extent of the burning, the degree of discolouration, and so forth. You may give a merely slightly discoloured cylinder the benefit of the doubt to this extent. Wipe it not only clean, but dry of oil, inside and out, and having bunged the exhaust valve opening tight with a cork, fill it with kerosene, and stand it up like an oil jar. If, in an hour or so, there is no percolation you may be sure no crack or pin-hole has formed, as kerosene will sweat through anything of the kind. But do nothing more to that cylinder for the moment. It is sick—metal is really alive, and more or less sentient—and must have time to recover.

### The Nature-Cure.

So, on the principle of the old foundry trick of putting newly machined cylinders aside to recover and weather—even rust if they want to—merely put the cylinder bodily in a drum of kerosene to rest for a couple of days, and the seized or seizure-threatened piston as well. This is better than the book-advocated plan of messing about the fine surfaces with emery; which can only destroy that glass-like smoothness that took many thousand lapping-tool revolutions to acquire. But in this way nine times out of ten it will be found that after forty-eight hours of the kerosene bath every trace of seizure will have vanished. If not, however, and the slightest roughness remains, it will not be cured by any emery-faking, but only by sending the cylinder to the nearest good motor works to be relapped, and polished inside and out; and the piston likewise.

It is also rather more than advisable to follow the procedure of the last two paragraphs in regard to any cylinder that has come into contact with the earth after a smash-up. They may look all right, and as if only new exhaust-valves and an all-round adjustment were necessary. But shock may have produced some crack—quite invisible, but growing little by little—round about the cylinder bases; and the cylinders, remounted and passed as sound, may fly off before the motor has been running five minutes. Better then than later, when use has begotten confidence; but best not at all.

#### De Minimis.

It is the little things that are easiest missed, too, that count in the life of a Gnome motor. One of them—left to chance as often as not, one notices—is the condition of the cooling flanges or fins. To do their work properly, they cannot be kept too clean, too oil-dry. Whenever the pistons are extracted for any reason, too, the occasion should be used to see that the rings are thoroughly cleansed of their usual filth, and swabbed with castor-oil; also that they move freely in their grooves, with their openings at least 120 deg. away from each other. There is also a brass ring on the premises of the lower part of the piston, called an obturator, that is supposed to keep the pressure from leaking. There are people who say it is about as much use as a headache to the motor. I don't know enough to agree or disagree: so would only venture this, that if I happened to be designing the pistons of any rotary, or any radial, motor, and desired to overcome pressure leakage, or excess oil-flush, I should literally corrugate their trunks with oil-rings at least a third of an inch wide: all there was space for. I should do this on the strength of old practice with that delightfully obedient power-fluid, white-hot steam; which has taught me that one ring of fluid will not attempt to approach, much less amalgamate with another of the same fluid—and therefore they both cancel each other. Why, I don't know; merely that it is so. Furthermore, such rings, apart from their value as unbroken, flexible and gas-resisting piston rings, would float the pistons with the absolute minimum of friction, as they would be permanent sockets of lubricant.

#### Use and Management.

Remains then, only to discuss the methods of using the Gnome motor; which—being merely a simple mechanic, not permitted to be a pilot—I can only transcribe from the directions—so far trustworthy—of those who make and sell it. Other things being equal—that is, assumed to be equal to their job—these methods seem to centre round the one point of fuel-feed control, in the various stages of flight. Four systems are used, direct drip-feed without any carburettor—the method said to be used in monosoupapes—petrol-pump feeds, air-pump pressure feed, and the carburettor. In the first case the usual squirt of petrol into the cylinders one by one as the motor is slowly turned and the valves open, is said to be unnecessary. It is sufficient to rotate the motor until one of the cylinders is directly vertical and opening downwards. Then open the needle-valve until the petrol drips out of this cylinder, close the needle-valve, give the motor two smart revolutions; and then, "cutting in" the ignition, one more to start, gradually opening the needle-valve after the first four or five explosions. If the valve is opened earlier one risks flooding.

#### Variations of Fuel Supply.

The procedure is not so very different, except for the petrol injection, in the second case; but if—in the case of monosoupapes—the petrol feed from the pump to the crank shaft-hollow is by piping, one first opens the lower needle valve, then the upper one above the hand-pump. One or two strokes of the pump will charge the motor and the pump, and the upper needle valve—supplying the hand-pump direct from the tank—may be closed; for the feed-pump being now charged, the petrol will thenceforward run in the direct-conduit line.

Air-pump feed, on the contrary, works direct on one branch pipe to the tank to maintain pressure, and by another branch to a pressure gauge and a bye-pass valve to get rid of excess pressure. On the face of it—contrary to the opinion of the printed directions—this seems to be the best of the three methods, where no carburettor is fitted, because of the assured constant air pressure behind the positive needle-control of the "petrol supply."

#### Economical Power Output.

But the one thing indicated in all cases is to get the maximum number of revolutions—not above 1,200 to 1,250 r.p.m.—with the minimum opening of the petrol-feed needle-valve; or in the case of the carburettor-fitted Gnome, the thinnest mixture. Having an eye then to the revolution-counter, one should also have an ear for the exhaust-bark, which should be clear and regular in its beat. The inclination, rather than the actuality, should be to starve the motor. For although—having once got the regulation right for direct-line flight—increasing the petrol-feed will be assuredly and immediately followed by a drop in the number of revolutions, and an unmistakable falling in the power-rendition, closing the needle-valve further, on the other hand, will result in an even more rapid weakening.

#### Regulation in Flight.

In making a quick, rather short turn, the motor will of course be sharply set to its hardest work; and it may be—especially with air-pump-feed—get a little too much petrol; and the exhaust-note dulls a little in consequence. So, too, in the case of a short, steep climb. Also a half turn on the needle-valve to lessen the feed in the case of a prolonged climb will probably give better results than if left in the approved setting for horizontal flight.

Short descents from moderate heights to ground can of course be made by merely cutting in and out on the ignition, without touching the needle-valve; but for long ones—spirals and so forth—after throttling down one should simply cut down the petrol-feed at once, or little by little, until the desired revolution-rate is attained. Then, the moment before stopping the vol plané or spiral, set the needle-valve back to normal for horizontal flight, and then gradually open out speed to normal. However, in making any descent with the motor stopped, cut out the fuel-feed entirely, but let the ignition alone: as the continuous sparking prevents any risk of the plugs being fouled by the perpetual lubrication, and then the mere re-opening of the needle-valve enables the motor to take up its work with absolute certainty.

#### Gnome—or Misapprehension?

Finally comes the point which has—or in my opinion should have—everything to do with the choice of the motor; as to whether, indeed, to install a Gnome at all; there being others. That is the choice of the wind-stick, be it a propeller or tractor. It is true enough that no bench-test or "fixed-point" kind of trial is to be compared with an actual flight-test to show how many revolutions the motor can really attain with a given propeller; also that a separate flight test should be made for each aeroplane as well as each series. But it is not only disingenuously begging the question, but dead against the development of efficiency, to say that "the proper propeller to use is the one that enables the motor to give its 1,200 to 1,250 revolutions." That is an unfortunate subordination of propeller and aeroplane to motor, against all engineering science.

#### The Real Consideration.

Afloat, hull lines and propeller curves are studied together to get the best results for the minimum expenditure of power, and there is every reason to adhere strictly to that principle in regard to the wedding of aero-curve and propeller efficiencies aloft. The clearest examples of this, as all clear-headed flight-folk will agree, are to be seen in the development of such originally light-powered machines as the Avro and the Nieuport, the absolute leaders to-day; the Cody biplane, with its notably slow-running propellers, the Breguet and the D.F.W. On the other hand, the mere harnessing of high-speed power to a tea-tray or to the dead mediocrity of an indifferently modified box-kite is not only neither flight development nor efficiency, but dead against both; and insistence on that course is the last impertinence. Of course, if you are designing a single-seater scout for extreme speed, and have found a likely propeller to suit, you cannot well do better than employ a Gnome. The combination of plane-curves and propeller suitability therefore will decide the question. No other consideration should foist it upon your choice. For there are many others, after all, even outside rotary practice altogether! At any rate, we cannot have our youngest science tricked out of her virginity.

*To be Continued.*



## FROM DENMARK.

The Danish Correspondent of *THE AEROPLANE* writes as follows:—

The following are extracts of German telegrams, newspapers and the aero paper "Flugsport," November 25th:—

Casualty list of the aerial troops.—Feldflieger Department: Oberlieut. Hillmann, who was told to be in prisonership in Antwerpen, was not found after the conquest; Lieut. Rappmund, shot by Belgium troops, when trying to escape after a forced landing by the river Mecheln; Oberlieutenant Heyne, missing, having not returned from a patrol flight to Dunkerque-Ostende; Lieutenant Siebel, having not returned from a patrol flight to Dunkerque-Ostende; Lieut. Friche, wounded; aviator Priewe, wounded; Feld-Sublieut. Doctor Kahn, wounded; chauffeur Meisert, killed; Voluntary Feldflieger Winterfeld, killed by accident at the aerodrome Posen; Workmaster Delfosse, killed by an aviator's bomb; Aviator Hoerster, wounded by an aviator's bomb; Aviator Francke, wounded by an aviator's bomb; Sublieut. in the reserve and Workmaster Seidler, wounded by an aviator's bomb; Aviator Stiefvater, killed by accident at Janourtz; Oberlieutenant Joly, taken prisoner by the French; Serg. Landon, killed by accident; Lieut. Sich, dead from his wounds; Oberlieut. von Stieteron, wounded; Lieut. Janson, killed; Reservist Röhrig, wounded; Lieut. Rocco, killed; Oberlieut. von Zangen, missing, having not returned from a patrol flight to Reims; Serg. Schlichting, missing, not having returned from a patrol flight to Reims; Gefreiter in the reserve Cazanne, slightly wounded, taken prisoner; Gefreiter Bake, wounded; Musketier John, likely taken prisoner by the French; Oberlieut. Müller, wounded; Lieut. Aschenborn, severe wounded by accident; Oberlieut. Schlag, killed by accident; Gefreiter in the reserve Gebhard, severe wounded and taken prisoner; Vizefeldwebel Milkowski, wounded; Sublieut. Zitzke, wounded; Chauffeur Hollstein, wounded; Chauffeur Jander, missing; Aviator Jagomast, missing; Aviator Richter, killed by accident; Aviator Rohrbach, wounded by accident.

The casualty list of the German Feldflieger Department, published in "Flugsport," issue January 13th, contains the following names: Lieut. Otto Thelen, Lieut. Schulz, Lieut. Frobenius, and Lieut. Rahn, taken prisoners by the English; Lieut. Meyer, missing; Vizefeldwebel Becker, missing; Lieut. von Osteroth, wounded; Lieut. von Bojanowsky, wounded; Voluntary Aviator Lietz, died from illness; Lieut. von Creyzt, missing; Voluntary Aviator, Sub-Lieut. Liehr, missing; Oberlieut. Deunert, missing; Lieut. Dahn, missing; Lieut. Reidel, heavy wounded by accident.

In the casualty list of the Bavarian Feldflieger Department appears Lieut. Ungewitter as wounded. On November 3rd, the naval aviators Trost and Kletté undertook a practise flight from Johannisthal. The biplane, piloted by Trost, fell from a considerable height, burying the passengers, who were killed at once.

On the day of the New Year the voluntary instructor, Heumann, had a fatal accident by Halberstadt. Heumann got killed at once, while his passenger, the voluntary pupil, Daubert, got only wounded slight.

On December 18th the aviator Gruse met with an accident at the aerodrome at Darmstadt. Gruse got heavy wounded, while his observer, Lieutenant Kohl, was killed.

\* \* \*

A further issue, published on January 27th in "Flugsport," runs: Sergeant Reglin, died from illness; Gefreiter Pulls, died from illness; Feldwebel Rother, died from illness; Gefreiter Segendorf, died from illness; Grenadier Blohm, hitherto heavily wounded, has died in French imprisonment; Captain Vogel von Falckenstein, missing (reported killed on a flight to Dunkerque by a French aeroplane); Feldwebel Parduhn, killed.

\* \* \*

The casualty list, issued in "Flugsport," February 10th, runs:—Feldflieger-department: Oberlieut. and Observer Fitzmüller, missing; Vizefeldwebel and aviator Zanettel, missing; Officer-Deputy and aviator Paul Otto Müller, missing; aviator Beyer, heavy wounded in an accident; aviator Lubierski, heavy wounded in an accident; aviator Donn, killed in a fatal acci-

dent; Lieut. of the Reserve and observer Winkler, missing; aviator and Vizefeldwebel Nienstedt, missing; Lieut. of the Reserve Hellywich, killed in a fatal accident; Sub-Officer Brand, killed in a fatal accident; Captain and observer Schmidt, missing; Oberlieut. and aviator Keller, missing; Aviator Bodmann, died from illness; Oberlieut. Bremer, missing; Lieut. Hug, missing; Voluntary aviator Hirth, wounded; Aviator Stein, died from gas-poisoning; Aviator Hengst, wounded.

Aviators' Reserve-department: Voluntary Aviator Konrad, killed in a fatal accident; Voluntary Aviator Böhme, killed in a fatal accident. One year's Voluntary Erich Müller, died from a fatal accident; Voluntary Aviator Kruse, wounded in an accident; Observer, flight pupil Kohl, killed in a fatal accident; Oberlieut. Count Udo von Ukull-Gyllenband, killed in a fatal accident.

Etap-Aviation Store, No. 3, "Ersatz Reserve" Kern, hitherto missing, is in French prisonership.

The well-known pilot and instructor of the Gotha Aircraft Works, Oswald Kant, met with a fatal accident, when flying a biplane at considerable height above Gotha in windy weather on January 30th. The aeroplane dived vertical, the petrol tank exploded, the biplane burning and the aviator being killed at once.

On January 26th a collision took place in the air at the Johannisthal aerodrome between two military aeroplanes, on board the one was only the pilot, voluntary aviator Herbert Konrad, on board the other voluntary aviator Georg Erich Müller and voluntary observer Gefreiter Wilhelm Böhme from aviators' reserve-department 2 in Adlershof. All three were killed on the spot.

According to "Leipziger Neuesten Nachrichten" a military aeroplane fell by the Castle Korpzow near Potsdam. Coming from the military aerodrome at Döberitz, it was starting from a landing, when the aeroplane hit a poplar. Both pilot, Sergeant Köpke, and observer, Captain Schmidt, were killed.

Norwegian bays and inlets have been very attractive to foreign vessels of all sorts. Over and over again the keen and small advanced guards of the warring countries entered these neutral waters to get a respite and to recover, before starting again the search for booty, till 50 submarines, belonging to one nation alone, have been observed by the vigilant Norwegian naval aviator, Lieut. Gran, at various times.

The picture of the situation is that the submarine is lying in the surface, with open hatchways, in the smooth and protected bay, while the crew is refreshing in the pure safe air by the Norwegian coast. When suddenly a two-seater Blériot monoplane appears from the blue sky or from amidst the fog, with the Norwegian colour waving from the tail, and others painted distinct at the undersides of the planes. In a vol piqué that brings him almost down on the dancing seas the guard from the air greets. "You cannot stay here, captain," he looks to say, "you must leave the Norwegian waters, or I must use myself of sharper means!" The sign gets understood, the hatchways are closed quick, the submarine dives, and in a minute only the dark figure can be seen below the surface on the way out to the open sea. And whenever the guards placed at various points of the Norwegian coast observe anything special Lieutenant Gran is informed so as to try the case in his aeroplane.

One day he stayed at his quarter to repose, when he received a wire from one of the guards; in an automobile he drove quick to the coast and started on his monoplane. Soon he discovered a famous submarine at rest, but the engine noise sufficed; in a minute the submarine had disappeared beneath the surface, and next day was learned that three big cruisers had been sunk. In all, Lieutenant Tryggve Gran has flown 3,000 kilometres over sea, and has even made a record flight, covering 700 km. on a flight out on open sea and back with a passenger.

\* \* \*

The whole crew of the airship "Schütte-Lanz II" has been granted the Iron Cross in reward of valuable information from patrol flights of the movements of the English North Sea Fleet, even enabling that submarine to torpedo "Cressy," "Atoukir," and "Hogue."

### More Ornithological Observations. (BUT NOT TOO LOGICAL.)

Among my pets at home I keep  
A clever cockatoo.  
He seldom talks, but thinks a lot.  
(Dear reader—one for you!)

Though kind of heart he sometimes bites,  
For he is not a coward.  
A monoplane is he by birth,  
But somewhat underpowered.

He walks much better than he flies,  
And climbs exceeding slow.  
His landing chassis's fairly strong,  
But, like his language, low.

His tail is of the Taube type,  
He has a streamline beak,  
He knows I buy THE AEROPLANE,—  
He reads it every week.

He takes the keenest interest  
In anything that flies.  
He's *very* cute, for he can tell  
Official yarns from lies.

It's really quite remarkable  
To see how keen he is.  
My wife declares he knows too much.  
And calls him "C. G. Whizz!"

But lately, to be up to date,  
He foretells aircraft raids.  
He screams, "Oh, Lizzie! Mind the bomb!"  
And frightens both the maids.

He seems to know an engine's hum,  
He's never at a loss.  
One day he heard a Ford go by  
And called out, "Albatros!"

His warnings got too much for us,  
He woke us every night,  
By squawking, "Here they come again—  
Oh, *DO* fetch Grahame-White!"

To-day he's gone. I heard him say,  
As he flew through the door,—  
"Scratch poor Polly! I'm off to join  
The Anti-Aircraft Corps!"

D. W. T.

The following letter has been received:—

"Sir,—In reference to your paragraph on the 'Parrots of Pearson's Weekly.'

"Resident here in Ripon is a parrot of uncertain age who spends her time gazing out of a window which faces N.E. Last April we residents of Ripon had the pleasure of a visit from Mr. Harold Blackburn in a Blackburn monoplane, who flew over from Harrogate, due south from here, so 'Polly' could not have been spying upon his movements. Long before he was within sight or sound of ordinary mortals 'Polly' de-

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C.D.C.

KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.



veloped something of the symptoms of the P.W. parrots, and was unconsolable until he had landed safely upon the race-course.

"Polly" objected just as loudly later to Mr. Blackburn in his 'Avro,' to Mr. Ding in a Handley-Page, also to Capt. Becke in B.E. 230 (perhaps you would sympathise).

"Naturally, most people would prefer a patrol of aeroplanes to a string of parrots, but my point is that this parrot was first acquainted with a monoplane and had never even heard of a 'Taube,' so it couldn't be 'derisive laughter' that she was filled with. Could you give another explanation?

"Polly" still lives here but has had no opportunity of testing her powers since the war enrolled Mr. Blackburn and Dr. Christie. I humbly suggest that you persuade one of your many flying friends to come and test her and incidentally delight the hearts of Ripon people. I will willingly send 'Polly's' address.

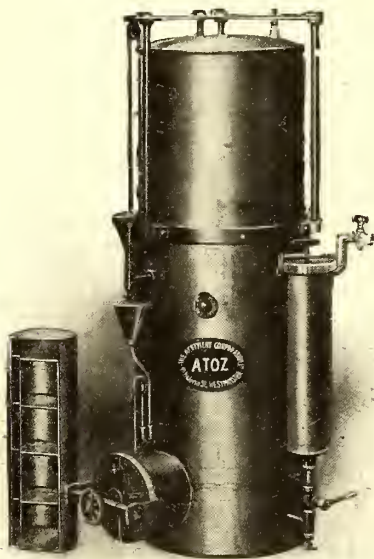
"Is Rome the only place that has had to depend upon a flock of geese? What of the R.A.F.?"

"(Signed) A VERY INTERESTED READER OF 'THE AEROPLANE,' (Miss) O. G. S."

### Autogenous Welding.

Any process which tends to improve the construction and strength of aircraft should be universally employed. Properly placed by the designer, and properly carried out by the workman with proper tools and material, one of the most valuable of modern processes is the fusing together of metals by the oxy-acetylene blowpipe. Autogenous welding is now largely employed by the big shipbuilding and engineering firms and the leading makers of aircraft, for with increased knowledge of the physical and chemical action of the process, and with wider experience of where autogenous welding may be used with advantage, it is found that in this way metals may be joined safely and reliably, while saving weight, time, and expense.

The Acetylene Corporation, Ltd., of 49, Victoria Street, Westminster, specialise in a plant of this description, and



The Atoz-Aero acetylene welding outfit, showing the acetylene generator, with the carbide container alongside. This plant has been designed especially to be easily transportable for such purposes as the welding of aircraft parts.

they have recently placed on the market the Atoz-Aero acetylene welding outfit which has been designed for aircraft work.

This outfit consists of a very stoutly constructed portable acetylene generator, of which an illustration is given, a com-

plete range of welding blowpipes to weld seven different thicknesses of metal, hydraulic back-pressure valve, oxygen regulator, suitable lengths of flexible tubing, tinted goggles, etc.

The price of this outfit complete is £15 18s. 6d., and, comparing the work which it can do with the time and cost of effecting the same end by other means, there is no doubt that such a plant would pay for itself in a very short time.

### Propellers.

The number of firms in this country who are making propellers being exceedingly small, it is particularly interesting to note that a new company, the Ebor Propeller Company, Kingston-on-Thames, has recently been formed, the directors of which have over five years' experience in the design and construction of first-class propellers and aeroplanes. They also have made a very careful study of the aerodynamical qualities of different sections of propeller blades, as a result of which they hope to put on the market a propeller having an entirely different blade section near the boss of the propeller, thus increasing the efficiency considerably.

Owing to an error in the advertisement of the Ebor Propeller Company in THE AEROPLANE of last week, the name was spelled Abora. This was singularly unfortunate, for the word "Ebor" is formed by the first letters of the words: "Efficiency By Our Rotative Aerofoils," thus indicating the high efficiency obtained by the use of better blade sections.

The company has also made a speciality of models for wind-tunnel experiments, and is able to design and construct any wood parts for aircraft, where the highest accuracy is of prime importance.

### School and Weather Reports.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
Hendon ...	Windy	Fine	Fine	Fine	Fine	Windy	Windy
South Coast ..	Fine	Fine	Fine	Fine	Fine	Rain to Fine	Rain to Fine
Lake District	Fine	Fine	Fine	Wet	Gale	Wet	Fine

**Hendon.**—AT THE BEATTY SCHOOL.—Instrs.: Messrs. G. W. Beatty, W. Roche-Kelly and C. B. Prodger. Pupils with instr.: Messrs. Bond (30 mins), Roche (25), Cooper (10), Monfez (5), Leong (25), Alcock (15), Whincup (5), Bransby-Williams (5), Wiles (10), Bright (15), de Meza (5), Forbes (45), Fraser (5), Yates (15), Fitzherbert (15). Machines: Beatty-Wright dual control and single-seater. Several passengers taken during the week, and Messrs. Bransby-Williams, jun., Yates and Fitzherbert continued extra practice.

**AT THE HALL FLYING SCHOOL.**—Instrs.: Messrs. J. L. Hall and J. Rose. Pupils with instr.: Messrs. Cook, Cownie, Mitchell and Francis. Doing strts or rolling alone: Lt. Blythe, Messrs. A. Davey, E. Mitchell, and Furlong. Machines: Hall tractor biplanes.

**AT THE RUFFY-BAUMANN SCHOOL.**—Instrs.: Messrs. E. Baumann and James Brothers. Pupils with instr. on 60 Caudron: Mr. Bell (24 mins.), Roobaert (12). Strts and rolling on 45 h.p. R.B., Messrs. Sykes, Jackson, Bell, Roobaert, Blandy rolling. Messrs. King, Kenworthy and Hydon making strts.

**AT THE LONDON AND PROVINCIAL AVIATION CO.'S SCHOOL.**—Instructors: Messrs. Warren and Smiles. Strts or Rolling: Messrs. McCauley, Dervin, Lincoln, Goodwin, Monsieur Deschamps, and Lieut. Fairbairn. 8's or cires.: Messrs. Goodwin and Lincoln, Lieut. Fairbairn. Mr. Henderson took good certificate on Wednesday, and Lieut. Fairbairn excellently on Friday morning after 95 minutes on the machine, and one week's tuition; a record. Machines: 2 L.P. biplanes.

**Windermere.**—AT THE N.A.C. SEAPLANE SCHOOL.—Instructors: Messrs. W. Rowland Ding and C. L. Pashley. Pupils: Flt. Lieut. Atherton, R.N., Messrs. C. A. Barber, R. Buck, A. Johnson, F. H. M. Macintyre, J. Lankester Parker, G. L. Railton, H. P. Reid, J. F. Ridgway, S. J. Sibley, and H. Slingsby. Extra Practice: Mr. J. Lankester Parker. Machines: N.A.C. Avro dual control propeller biplane, N.A.C. tractor.

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All advertisements for this column should arrive at this office by 6 p.m. MONDAY to ensure insertion. For the convenience of Advertisers, replies can be received at the office of "THE AEROPLANE," 166, Piccadilly, W. Special PREPAID Rate—18 words 1/6; Situations Wanted ONLY—18 words 1/-, 1d. per word after.

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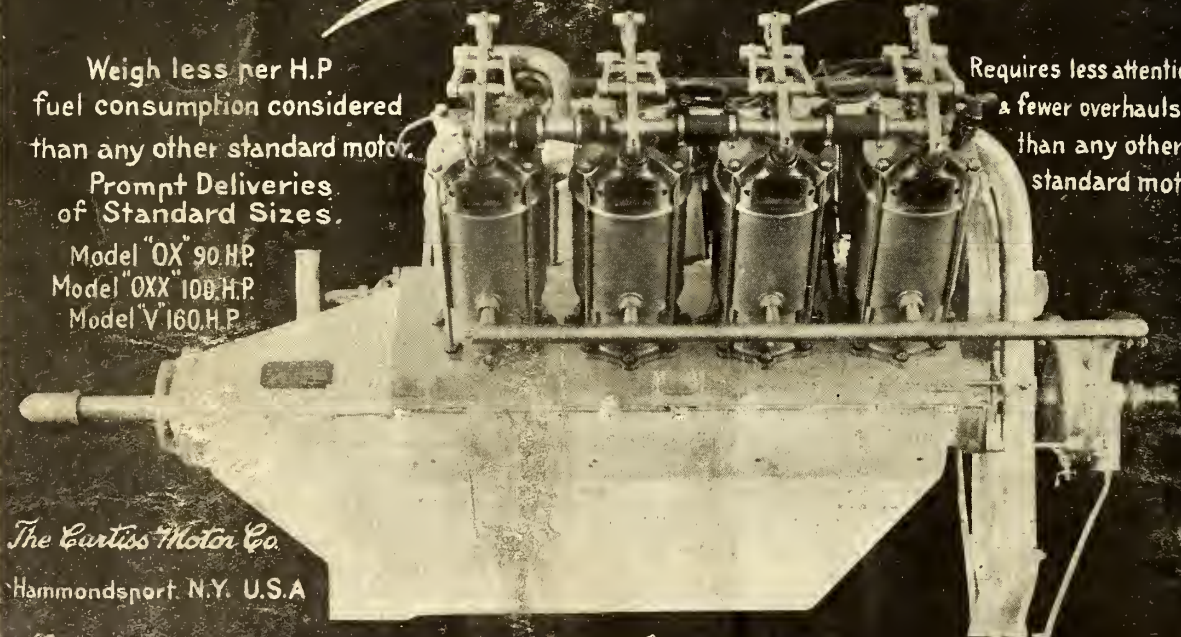
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# THE AEROPLANE

*Edited by C. G. GREY. ("Aero-Amateur")*



VOL. VIII. [REGISTERED AT THE G.P.O. AS A NEWSPAPER.] WEDNESDAY, APRIL 14, 1915.

No. 15

## SOME MORE PILOTS.



Left to Right, Top Row—Mr. C. B. Prodger, Instructor at Beatty School, American Certificate No. 159; Mr. J. B. Ferrand, Certificate No. 1111 (Born in South Africa); Mr. G. H. Beard, Certificate No. 1095 (Born in England); Mr. C. H. C. Smith, Certificate No. 923 (Born in U.S.A.). Bottom Row—Mr. G. Donald, Certificate No. 1061 (Born in Scotland); Mr. J. D. Newberry, Certificate No. 1060 (Born in South Africa); Mr. D. C. MacLachlan, Certificate No. 930 (Born in Scotland). All the foregoing were pupils at the Beatty School at Hendon, Mr. Prodger, the instructor, having been one of Mr. Beatty's early pupils in America. The eighth and last portrait is of Mr. W. J. McConnochie, Certificate No. 1118 (Born in Scotland), a recent pupil of the Hall School at Hendon. It is peculiar that of eight pilots taken at random only one is an Englishman by birth.



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## The Armament Supply Problem.

Some few years ago, when we were much nearer to being at war with both our present allies, than with either of our present enemies—or, perhaps, I should say, our present enemy, since no one feels any animosity against the poor misguided Austrians, Hungarians, and Turks—Mr. Rudyard Kipling wrote a cynical little poem beginning:—

"Who can doubt the secret hid under Cheops pyramid

"Is that the contractor did Cheops out of several millions,

"And that Joseph's sudden rise to comptroller of supplies

"Was a fraud of monstrous size worked on Pharaoh's swart civilians."

Incidentally, even Joseph, clever as he was, occasionally made mistakes which haupered his career. Though the corner in wheat, which he worked in collusion with Pharaoh, is the first deal of its kind on record, he neglected that policy indicated by Mr. Kipling in the line—

"Make your peace with the women and men will make you C.B."

What Mr. Kipling wrote then was evidently intended to suggest that human nature had not changed since the Pyramids were built, and there seems no good reason to imagine that any change has taken place since he put the case so neatly, except that in war time the rises are sudden and the frauds monstrous—also they are more numerous, and more varied in kind.

Further, it may be well to point out that a number of small frauds may do as much harm as one big one, and a number of subordinates either conspiring together or trying independently to defraud their employer can do more damage to the country than if the employer himself was the culprit. This is particularly the case in the supply of armament—as, for instance, in the case of the men on the Clyde who arranged a "stay-in" strike, by which they keep something like regular hours and do as little work as possible while in the shops.

Another very deliberate form of fraud is, I am told, rather common in the aeroplane trade. A man will come in late on purpose on several mornings a week, thus missing the first part of each day—or "losing a quarter," as it is called in the shops—and so will lose his ordinary pay for those hours, and then he will work later in the evening to make up for it, and claim "overtime" pay for the extra hours at the end of the day. This, of course, is fraud pure and simple.

A similar form of fraud is that of the man who cuts a day's work at ordinary rates and works all Sunday at double pay—which is the usual Sunday overtime rate—to make up for it.

As the result of such scheming it is frequently found that a man is drawing overtime pay for perhaps 20 per cent. or 25 per cent. of his work, though his actual hours spent in the shop may only equal those of men who are drawing no overtime pay at all.

There is quite an easy way of stopping this kind of fraud, thanks to a rule existing in the Coventry Dis-

trict of the Society of Amalgamated Engineers, or whatever its correct title may be. The rule was made by the Trade Union itself for the protection of its own honest, hard-working members, and it amounts simply to a regulation of rates by which no man is entitled to overtime until he has put in the same number of hours in the shop as make up the usual working hours.

Thus, if a shop is running from 6 a.m. to 6 p.m. five days a week, with an hour for breakfast and an hour for dinner, and four hours on Saturday—or 54 hours in all—with overtime pay after 6 p.m. and on Saturday afternoon, a man who loses two "quarters," from 6 a.m. to 9 a.m. during the week, will have to work four hours' overtime after 6 p.m., or on Saturday afternoon, at his ordinary rate of pay before he can claim any overtime at all.

This rule is not, apparently, known to all works managers of aeroplane factories, some of whom have not had much experience of other trades, so the information may be worth having. Also, it is pretty certain that the better-class workmen, who are invariably good timekeepers, will be very glad to see such a rule adopted in the aircraft industry.

### The Official Adviser.

The general adoption of such a rule will help materially to increase output, and for that reason it is recommended to the notice of Mr. George Booth, whose recent appointment as industrial adviser to the War Office has attracted so much attention in the press.

Some considerable time ago, before there was any question of appointing such an adviser, I had the good luck to meet Mr. Booth and to have some conversation with him concerning the aircraft industry. He has probably forgotten the incident by now, among his multifarious activities in other directions, but for my part I suspect that the Authorities who discovered and appointed him have hit on the right man, for he is the first civilian Government official I have come across who wanted to know things instead of wanting to teach everybody else their business. It is true that he was not a Government official at the time, and that the best of men are liable to infection by the microbe of "officialdom," but there are always some who are immune to the disease, and probably he has been thoroughly inoculated against it by his experience as a director of steamship companies who work on Government contracts.

His wide experience of industrial affairs generally should enable him to find the "snags" which are hanging up deliveries of armament, and this question of fraudulent overtime is one of the worst of the lot, for it affects Government establishments as much as private workshops.

### Useless Overtime.

One assumes that Mr. Booth's activities will extend to Government factories as well as to the various "trades," in which case I commend to his attention a form of fraud practised, I am told on good authority, by employees in the Royal Aircraft Factory at South Farnborough. One cannot, of course, expect Mr. Mervyn O'Gorman, C.B., to discover these things, for his time as Superintendent must be fairly well occupied, on such days of the week as his contract requires his



attendance at Farnborough, in superintending his heads of departments and correcting their mistakes, without delving in the workshops and finding out the petty frauds of his workpeople, though, in the aggregate, these petty frauds may cost a mint of money and delay deliveries to a serious extent.

Any manufacturer of aeroplanes who advertises for hands knows that he always receives replies from men from the R.A.F., and that if he interviews such men he finds that they are in most cases first-class workmen who are thoroughly fed up with the lack of system in the R.A.F. shops, where they complain that they have to put in long hours simply killing time for the benefit of someone else, and without producing anything like as much useful work as they should and could. It is true that they are paid for plenty of overtime, but that is no satisfaction to a conscientious workman, who, in this time of national stress, desires to produce his maximum output of useful armament, in the form of aeroplanes or aeroplane parts.

#### **Understandings.**

Apparently, the trouble arises through an "understanding"—as one may call it, euphemistically, between certain shop foremen who arrange that their shops shall put in all the overtime possible, because the foremen draw pay in proportion to the amount of overtime worked in their shops, whether they themselves are actually in the shops all the time or not. As a result, it is stated, men are booking 76 hours' work a week when their actual output is so small that they would have to kill time to put in 54 hours a week.

Nothing is so demoralising as systematic slacking, and one cannot wonder that self-respecting and patriotic workmen do their best to get away and join other firms where they can work at high pressure and feel that they are really doing something for their country, although age, physical unfitness, or the cares of a family prevent them from taking their places in the firing-line.

It is further stated that when such men wish to leave every obstacle is put in their way, even to the extent of telling them that their Insurance cards will be withheld, and that if they go to any other aircraft firm the War Office will fetch them back. In this way not only is the work of good men wasted, but they are prevented from going where they can increase the efficiency of other firms whose work is of greater value.

If these stories came from chronic grumblers, or men with personal grievances against those in authority, one might ignore them; but they do not, and one hears the same thing all round the trade, so one cannot help believing them.

It seems that the foremen at fault form a little gang who were originally shop-mates in a motor factory, and as the motor trade is notoriously the most "tricky" branch of the engineering industry, from top to bottom—having been built up largely by young adventurers before any of the big old-established engineering firms took a hand in it—it is the easier to understand how the aircraft industry has become infected in certain spots.

It is the more gratifying, therefore, to find that in these days respectable engineering firms of high repute, several of whom have done much to raise the tone of the motor trade, are taking an active interest in aeroplane and aero-engine construction, for when the aeroplane boom comes, in a few years' time, they and the established aeroplane firms—who, happily, have a very clean reputation—will be able to absorb the orders and so the undesirable element may be kept out. Meantime, such part of that undesirable element as has crept in is doing considerable harm, and should be eliminated as quickly as possible.

#### **Inspection Conditions.**

Another trouble at the R.A.F. which the Superintendent cannot be expected to discover, though it causes

delayed deliveries and waste of money, is the matter of inspection. In the old, bad days, before the formation of the Aeronautical Inspection Department, Royal Flying Corps, when R.A.F. inspectors condemned every outside constructor's work with impartial partiality, whether it was made to Government design or not, it was more or less understood that the duty of an inspector was to condemn, and the cute constructor always let a certain amount of obviously sloppy work go past his own inspectors so that the R.A.F. man could have something to play with.

Then the A.I.D. startled the "trade" with the revolutionary doctrine that the duty of an inspector is to pass everything which is obviously fit for use, and the immediate result was an increase of output and an improvement in the quality of the work done, for the constructors found that they were working with a sympathetic consumer of their goods, instead of being compelled to dodge a dangerous competitor, so that the less "wasters" their shops produced—which meant the fewer parts the inspectors had to condemn—the better they were liked and the more confidence the R.F.C. had in their machines.

Therefore, some months before the war, R.A.F. inspection became a matter only affecting its internal economy, and one might have expected some change in the policy of the inspectors, who were then employed in inspecting stuff produced in the R.A.F. itself or by firms who were making stuff to the order of the R.A.F.—such things, for example, as material and fittings for B.E.s and R.E.s, parts for R.A.F. engines, certain navigating instruments and ganges, and so forth—though why anything had to be made outside is something of a mystery, considering that with ordinary commercial organisation the number of hands on the R.A.F. pay-roll was, and is, sufficient to turn out everything ever ordered from outside firms, and then leave enough over to supply most of the parts required by contractors building aeroplanes to Government designs.

#### **The Big Buyers.**

The amount of material and fittings actually bought by the R.A.F. in these days is very small as compared with the amount bought by the R.F.C. Ordnance Department—inspected sympathetically by the A.I.D.—and the amount bought by the large and rapidly increasing number of firms who are building aircraft for the R.F.C.—also inspected by the A.I.D.—and for the Admiralty, which latter authority has dissociated itself from the R.A.F. more emphatically than ever since the episode of certain B.E.2 cs.

Incidentally, the Navy's new method of increasing the climbing speed of B.E.2 cs. with standard engines is the brain-wave of a century, and far surpasses stripped chassis and streamlined wires.

#### **Can the Leopard Change His Spots?**

However, such firms as are making parts for the R.A.F. still find the old inspection difficulties, and these apparently arise from much the same cause as the overtime trouble—namely, that foreman must be loyal to foreman, whether he is loyal to his employer or not. There seems to be a clear understanding that anything made inside the Factory must be passed, if possible, because if a shop turned out an undue proportion of "wasters" the foreman would get into trouble over bad work done under his supervision—also the question might be raised as to why so much overtime only produced stuff which had to be scrapped.

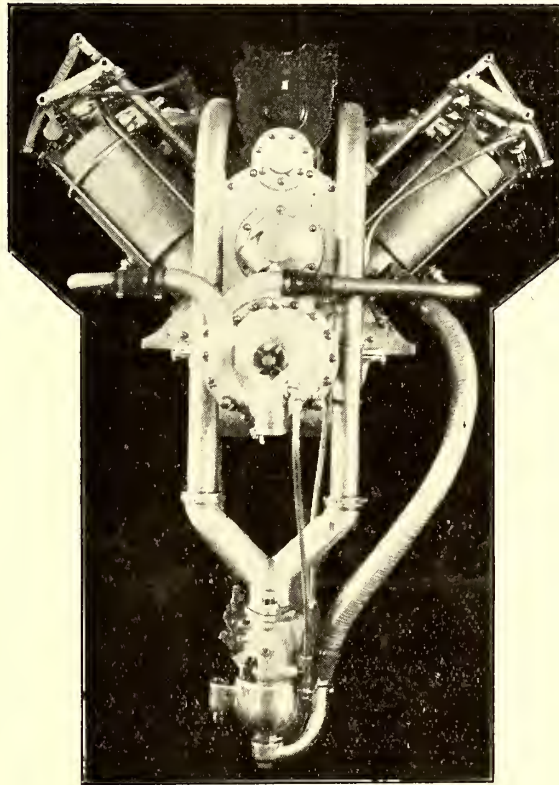
As a natural result, it follows that anything produced outside the Factory must be condemned, if possible; for, in case of inquiries from higher authorities, it can then be shown that the quality of the work done in these shops is better than that done by outside firms, and, as many of those firms have a high reputation, it follows that the work done inside the R.A.F. must be of still higher quality. Also, of course, a high percent-

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age of condemned parts may be taken as indicating the vigilance of the inspector, who thus shows that he is earning his money, and possibly merits promotion.

It is not quite clear how the inspection at the R.A.F. is arranged: whether each shop has its own inspectors, under the shop foreman, or whether the output of all the shops and of the outside firms has to pass a central inspection shop in which the inspectors are unable to identify the particular place in which the work has been done; but, in either case, it is presumably easy to tell the R.A.F. product from the outside product, so that once there is a clear understanding that outside products must be condemned, and R.A.F. products passed, the harm is done, money is wasted, and the production of aeroplanes delayed.

#### Liquor Versus Labour.

It seems to me, as an unprejudiced observer, that the "Labour versus Liquor" question is of minor importance when workmen and foremen alike are in a position to hold up output in the manner I have indicated above. The scheming scoundrel is seldom a drunkard. He soon finds that drink fuddles his wits and upsets his schemes, and if he takes to drink he invariably gives himself away and is easily circumvented.

Nevertheless, the drink question does affect the matter of "losing quarters" and consequent unnecessary overtime. One of the works managers with whom I served many years ago had a theory that it was a mistake to start work before 8 a.m. because the men never did decent work "before the streets were properly aired." He believed that it was better to run from 8 a.m. till 12.30 p.m. without a breakfast-hour, and from 1.30 p.m. till 7 p.m., with half an hour for tea at 5 p.m., thus making a 9½-hour day, and from 8 a.m. till 1 p.m. on Saturday. It meant burning more gas in the evening, but he certainly got more work done, because lost quarters were very rare.

Still, lost quarters in a day beginning at 6 a.m. are chiefly due to going to bed at 11.30 p.m., or midnight, after three or four hours of steady soaking in the fetid atmosphere of a public-house; and undoubtedly if all public-houses shut at 8 p.m. most men would go to bed before 10 p.m. and could start easily at 6 a.m.—and do it all the better for not having a skinful of alcohol and a head full of fumes. Closing at 8 p.m. would leave plenty of time in which to fetch the supper beer, which is a perfectly legitimate article of consumption—for those able to digest it.

#### The Treating Evil.

The argument that men will soak whiskey and beer at home if the public-houses are closed early may be true of a minority, but the bulk of the unnecessary and poisonous alcohol consumed is drunk because both in Clubs and Pubs there exists the foolish custom of

"standing one's round." If three men go into a public-house, or an hotel, or even some of the less reputable clubs, each feeling that he really wants a drink, each knows he must stand a round, which means three drinks each instead of one. Probably they meet two or three friends, which means several more rounds. And so the original one necessary, or at any rate desirable, drink becomes five or six, which is absurd, for it does no one any good except the producer of the drink.

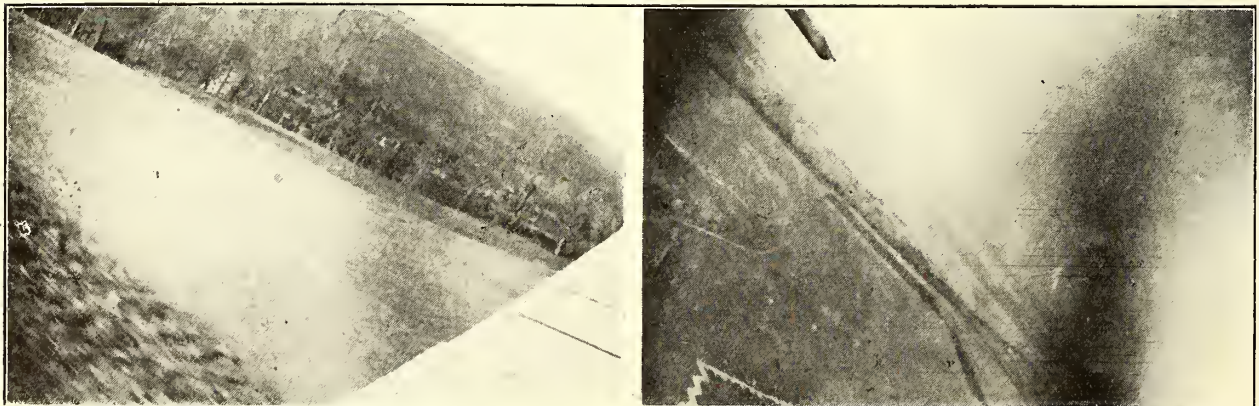
Owing to the fact that the effect of drink, simply as a thirst quencher, is transitory, this may happen two or three times in the course of an evening, but the effect of alcohol as a poison is cumulative and piles up from day to day and week to week. Hence the evil of continual treating among men who meet every day of their lives, whereas a gorgeous, blind burst, ending with a return home with the milk in the morning sunlight, say three or four times a year, is rather healthy than otherwise, being the equivalent of "breaking training" to an athlete.

No one would grudge officer or man returned from the trenches such a burst, nor would one grudge it, on occasion, to a workman who has been steadily working overtime for three months on end. But steady drinking without ever getting really drunk plays the devil with good work, whether the drinking is done in the officers' mess—as is often the case—or in a club, or in the working-man's pub. Therefore, the obvious thing to do is to shut down on all alcohol at 8 p.m., for then young officers will not have pink eyes at 6 o'clock parades, and workmen will not lose quarters.

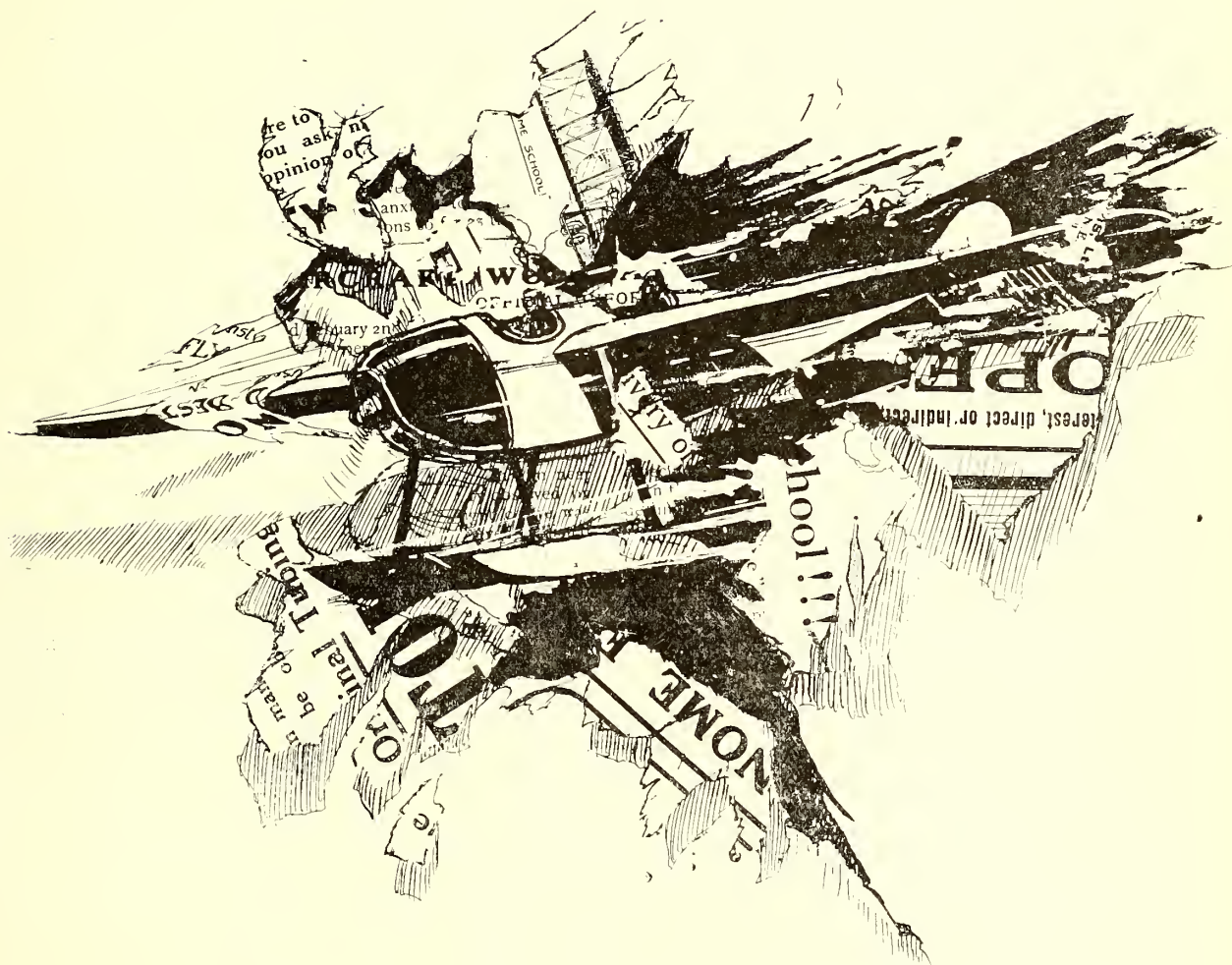
#### The Crucial Time.

The next six months form the crucial period of the war. Also, they are the lightest months of the year. If everyone knocked off late drinking and took to working throughout the daylight hours during those months, abjuring artificial stimulants and artificial light as well, more work and better work would be done both by the workpeople and by the Services. The early morning air, after a good night's rest, of course, is the finest stimulant in the world. Those who have been through the Central Flying School, with its strict rules about "early to bed and early to rise" in the summer months, will bear out my argument.

The Government has complete control to-day of means of transit as well as sources of production. Let the Government arrange for easy conveyance of the workmen to their shops in the very early morning, and let them shut down all drink supplies at such an hour that the men can get a thorough and healthy night's rest, and they will go far towards producing efficiency in the production of aerial and other armament.—C. G. G.



WAR FROM ABOVE.—Two small views taken from an aeroplane. On the left, batteries masked by a wood—taken low down, the wing of the machine showing in the right corner. On the right, a zig-zag French trench, with the German position in the distance—taken higher up, and showing the tail of the machine on the left. The horizon is somewhat askew.



WE ARE SORRY TO MAKE A MESS OF A PAGE LIKE THIS,  
 BUT WE ARE GOING AHEAD—ALL OUT!  
 THE SEAPLANE SCHOOL ON WINDERMERE.



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## Naval and Military Aeronautics.

### GREAT BRITAIN.

From the "London Gazette," April 7th, 1915.

WAR OFFICE, APRIL 7TH.

REGULAR FORCES.—GENERAL STAFF OFFICERS:—

1st Grade—Maj. C. C. Marindin, R.A., from 2nd grade, and to be temp. lieutenant-col. March 9th.

2nd Grade—Maj. W. W. Warner, ret. pay, I.A., vice Maj. C. C. Marindin, R.A. March 9th.

3rd Grade—Temp. Lieut. R. F. Wigram, vice Maj. L. E. Morrice, D.S.O., R. of O. March 13th.

Deputy Director—Brevet Lieut.-Col. W. S. Brancker, R.A., from an assist. director, and to be temporary colonel. March 9th.

Assist. Director—Maj. D. S. MacInnes, D.S.O., R.E., from a dep. assist. director, and to be temp. lieutenant-col. March 9th.

Dep. Assist. Director—Capt. G. M. Griffith, R.A., from a staff capt. March 9th.

Staff Capt.—Capt. W. B. Caddell, R.A., and seconded. March 9th.

ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers to be Flight Commanders.—March 24th: Lieut. G. A. K. Lawrence, R.A., and temp. capt.; Lieut. G. D. Mills, Notts and Derbys, and temp. capt.; Capt. J. G. Weir, 3rd Highland (Howitzer) Brig. R.F.A., T.F.

Assist. Equipment Officer—Lieut. D. L. Allen, R. Irish F., from a flying officer. March 29th.

Flight Coms. to be Squadron Commanders (and temporary majors). March 24: Capt. C. G. Hoare, 39th King George's Own Central India Horse, Indian Army; Capt. C. L. N. Newall, 2nd King Edward's Own Gurkha R. (the Sirmoor Rifles), Indian Army.

SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieut. (on prob.) H. T. Musker confirmed in rank. G. O. Hayne to be sec. lieut. (on prob.). January 25th.

\* \* \*

From the "London Gazette," April 8th, 1915.

WAR OFFICE, APRIL 8TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—AERONAUTICAL INSPECTION DEPARTMENT.—Assist. Insp. —Hon. Lieut. L. T. G. Mansell, from temp. Insp. of Ordn. Mach., 3rd class, A.O.D., to be temp. lieut., and transferred to General List. March 23rd.

\* \* \*

From the "London Gazette," April 9th, 1915.

ADMIRALTY, APRIL 7TH.

ROYAL NAVAL AIR SERVICE.—Prob. flight sub-lieuts. confirmed in rank of flight sub-lieut.: W. K. F. G. Warneford. Oct. 24th. C. W. Dickinson. Oct. 27th.

\* \* \*

WAR OFFICE, APRIL 9TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officer—Lieut. A. F. A. Hooper (N. Staffs.), from Res., and seconded. March 1.

INFANTRY.—Royal Fusiliers.—Capt. R. P. Mills (flying officer, Royal Flying Corps, Military Wing), from 5th (S.R.) Batt., to be sec. lieut., and seconded. August 14th, 1912. (Substituted for notification in "Gazette" of January 5th.) Sec. Lieut. R. P. Mills to be lieut. January 21st, but rank for seniority from December 12th, with precedence next below R. F. Cooper, and remain seconded. (Substituted for notification in "Gazette" of March 27th.)

SPECIAL RESERVE OF OFFICERS.—RESERVE UNITS.—Officer seconded for service with Army Cyclist Corps. December 5th.—3rd Connaught Rangers.—Sec. Lieut. R. Delacombe.

SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—To be sec. lieuts. (on prob.): N. H. Read. March 11th. H. L. Cooper. March 15th. March 25th: C. F. Collett, R. M. Murray, G. Merton.

\* \* \*

From the "London Gazette," April 12th:—

WAR OFFICE, APRIL 12TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flight Comms. to be Sqdn. Comms.

—Brevet Major H. R. P. Reynolds, R.E. March 27th. Capt. P. L. W. Herbert, Notts. and Derbys., and temp. maj. March 28th. Capt. D. S. Lewis, D.S.O., R.E., and temp. maj. April 2nd.

Flying Officers.—March 19th: Temp. Lieut. S. G. Gilmour, (12th A. and S.H.), and transferred to General List, New Armies; Lieut. L. F. Richard, R.A., and seconded; Sec. Lieut. M. H. Monckton, R.A., and seconded; Lieut. R. E. B. Hunt, 3rd Shropps. L.I., and seconded. March 29th.

INSPECTION STAFF.—Assist. Insp.: Maj. H. D. Larymore, C.M.G., R. of O. January 15th.

### NAVAL.

The following appointments were notified at the Admiralty on April 6th:—

ROYAL NAVAL AIR SERVICE.—Mr. S. R. Hemingway granted a temporary commission as lieut., R.N.V.R., and appointed to the "President," for duty with Royal Naval Air Service, to date April 3rd.

Mid. E. C. W. Vane-Tempest, R.N.V.R., promoted to the rank of temp. sub-lieut., R.N.V.R., and appointed to the "President," additional, for duty with the Royal Naval Air Service, to date January 18th.

\* \* \*

The following appointments were notified at the Admiralty on April 7th:—

ROYAL NAVAL AIR SERVICE.—Messrs. D. K. Cameron and C. W. Nutting granted temporary commissions as lieuts. R.N.V.R. and appointed to the "President," additional, for R.N.A.S., to date March 30th.

Messrs. O. H. Crowther, H. L. Crowther, and N. Lea granted temporary commissions as sub-lieuts. R.N.V.R. and appointed to the "President," additional, for R.N.A.S., to date March 30th.

\* \* \*

The following appointments were notified at the Admiralty on April 8th:—

ROYAL NAVAL AIR SERVICE.—The following have been granted temp. commissions as lieutenants, Royal Naval Volunteer Reserve, and appointed to the "President," additional, for R.N.A.S., to date as stated: G. C. Jackson, April 5th, and E. D. Adams, April 6th.

The following have been granted temp. commissions as sub-lieutenants Royal Naval Volunteer Reserve, and appointed to the "President," additional, for R.N.A.S., to date as stated: A. H. Hall, T. E. Viney, G. N. Lindman, April 5th; C. A. Maitland-Heriot, April 6th.

Prob. Flight Sub-Lieuts.—W. K. F. G. Warneford and C. W. Dickinson, confirmed in rank with original seniority, and appointed to the "President," additional, for R.N.A.S., to date March 26th.

\* \* \*

The following appointment was notified at the Admiralty on April 9th:—

ROYAL NAVAL AIR SERVICE.—Mr. J. G. Struthers entered as probationary flight sub-lieutenant, for temporary service, and appointed to the "President," additional, for R.N.A.S., to date April 6th.

\* \* \*

The following appointments were notified at the Admiralty on April 10th:—

ROYAL NAVAL AIR SERVICE.—The undermentioned have been entered as probationary flight sub-lieutenants and appointed to the "President," additional, for R.N.A.S., all to date April 7th: J. H. Rose, F. H. Aspdon, M. A. Simpson, J. F. Hutchinson, R. S. Smith, F. Fowler, G. F. Smythe, and E. Alexander de Lossy de Ville.

\* \* \*

The following appointments were notified at the Admiralty on April 12th:—

ROYAL NAVAL AIR SERVICE.—The following have been granted temporary commissions as lieutenants and appointed to the "President," additional, for duty with R.N. Air Service, to date as stated: E. L. Dale, April 9th; C. A. W. Taylor, April 11th.

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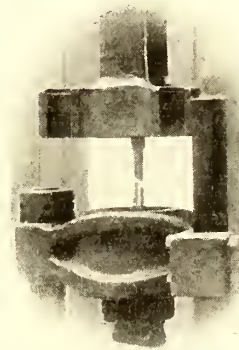
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Mr. R. Chambers granted temporary commission as sub-lieutenant and appointed to the "President," additional, for duty with R.N. Air Service, to date March 30th.

Mr. W. H. E. Campbell entered as probationary flight sub-lieutenant and appointed to the "President," additional, for R.N. Air Service, to date March 29th.

Temp. Sub-Lieut., R.N.V.R., F. C. Archer to the "President," additional, for duty with R.N. Air Service, to date April 9th.

\* \* \*

The Press Bureau issued on April 10th a list of Admiralty awards for distinguished service in a supplement to the "London Gazette." The following were awarded for flying service:—

#### DISTINGUISHED SERVICE ORDER.

The King has been graciously pleased to give orders for the following appointments to the Distinguished Service Order in recognition of services as mentioned:—

#### COMPANIONS OF THE DISTINGUISHED SERVICE ORDER.

For services rendered in the aerial attack on Dunkirk, January 23rd, 1915:—

Squadron Commander Richard Bell Davies.

Flight Lieutenant Richard Edmund Charles Peirse.

These officers have repeatedly attacked the German submarine station at Ostend and Zeebrugge, being subjected on each occasion to heavy and accurate fire, their machines being frequently hit. In particular, on January 23rd, they each discharged eight bombs in an attack upon submarines alongside the mole at Zeebrugge, flying down to close range. At the outset of this flight Lieutenant Davies was severely wounded by a bullet in the thigh, but nevertheless he accomplished his task, handling his machine for an hour with great skill in spite of pain and loss of blood.

#### DISTINGUISHED SERVICE MEDAL.

For gallant behaviour on reconnaissance in a hydroplane at Akaba about January 6th, 1915—

Quartier-Maitre Mervé Grall, of the Aviation Marine Française.

\* \* \*

Squadron-Commander Davies will be remembered as second in command at Eastchurch. Subsequently he went to Somaliland to investigate the possibilities of using aircraft there. He came home with fever, and had only just recovered when war broke out. His very gallant flight over Zeebrugge is regarded in the R.N.A.S. as one of the best things done in the war. Equally efficient as an officer and as an aviator his D.S.O. is well deserved.

Lieut. Peirse is generally estimated to be one of the very finest fliers in the R.N.A.S., and he has already done much good work on the Continent. He is the son of the Admiral Commanding in the East Indies—whose force was recently bombarding Smyrna. Lieut. Peirse entered the R.N.A.S. as a civilian, having been prevented by delicate health from entering the Navy at the regulation age.

Quarter-Master Grall will be remembered as pilot of the hydro-monoplane on which he was forced to land in the Sinai Peninsula, with Captain Stirling, D.S.O., Royal Dublin Fusiliers, as passenger, both he and his passenger being injured in the smash so that they took many hours to reach the coast. Captain Stirling's observations proved to be of the highest value. His D.S.O. was, however, won several years ago.

\* \* \*

It is to be hoped that someone in the Air Department will bring to the notice of the draftsman of the official notice certain errors. For instance, it seems that "attack on Zeebrugge" would be more correct than "attack on Dunkirk."

Squadron-Commander is a rank in the Navy and not a grading, so that it seems wrong to write of "Lieutenant Davies," in an official document. That is not even the corresponding rank in the Navy proper, for a Squadron-Commander is a two-and-a-half striper, and throughout the Navy officers of such rank—Lieutenant-Commanders—are colloquially addressed as "Commander."

Further, the word hydroplane is used in quite an erroneous sense. A hydroplane is a species of motor-boat. The official word for an aeroplane flying off water is "seaplane," and technically these are divided in "hydro-monoplanes" and "hydro-

biplanes," or "sea-monoplanes" and "sea-biplanes," or even the journalist's word waterplane may be used, but hydroplane is utterly wrong.

Finally, the French military title for "Quarter-master" is "Maitre-de-Logis." It is possible that the French Navy may use the words "Quartier-Maitre," but it is very unlikely, and it looks as if the draftsman of the document had translated with the help of a dictionary from a dispatch written in English.

\* \* \*

On Thursday, April 8th, about 11.45 a.m., a balloon was seen coming from the direction of Purfleet over the West Thurrock marshes, at about 20 feet, and as it reached the edge of the river the basket struck the high river wall, throwing out its occupant, Sub-Lieut. Fletcher, R.N.A.S., who fell into the mud, which was very soft owing to the tide just having gone down. He landed about 3 feet from the edge of the water and managed to get ashore with the assistance of a bystander.

He was taken to the local vicarage, where he changed his clothes and afterwards proceeded to rescue his balloon, which had travelled down to Grays, where it became entangled with the s.s. "Exmouth." Later it was rumoured locally that the balloon was a captive which had broken away from Wormwood Scrubs, though one does not vouch for the fact.

#### MILITARY.

The Field-Marshal Commanding-in-Chief the British Forces in France reported as follows in a communiqué issued on April 6th:—

April 5th, 1915.

(1) The situation still remains quiet on our front. A change in the weather has limited the possibilities of activity on the part of our aviators.

\* \* \*

The following passage in the descriptive account which has been communicated by an Eye-Witness present with General Headquarters continuing and supplementing the narrative published on the 5th inst., deals with aircraft:—

April 6th.

The situation remains as it was. On Thursday, April 1st . . . a bomb was dropped by a German aeroplane on Armentières without doing any damage, and during the night the hostile guns opened on our trenches on the left centre.

\* \* \*

The following appeared in the Casualty List issued on April 7th:—

PREVIOUSLY REPORTED MISSING, NOW UNOFFICIALLY REPORTED TO HAVE DIED AS THE RESULT OF AN AEROPLANE ACCIDENT: Warrant, Lieut. A. St. J. N., the Black Watch and Royal Flying Corps.

Alastair St. John Munro Warrant, who was the younger son of Mr. T. A. Warrant, of Lemtram, Bridge of Allan, entered the Royal Highlanders (Black Watch) in October, 1907, and was promoted lieutenant in August, 1910. In April, 1912, he was employed with the West African Frontier Force. He was appointed to the R.F.C. last year, being gazetted as Flying Officer on October 21st, 1914, and acted for a time as adjutant to Major Longcroft at Brooklands.

He took his certificate, No. 840, on a Vickers biplane at Brooklands on July 14th, 1914. He was born at Polmont, Scotland, on January 13th, 1889.

It is reported from France that Mr. Warrant died in hospital at Lille as the result of injuries received when he was brought down by German fire, and that he was accorded a military funeral by the German military authorities.

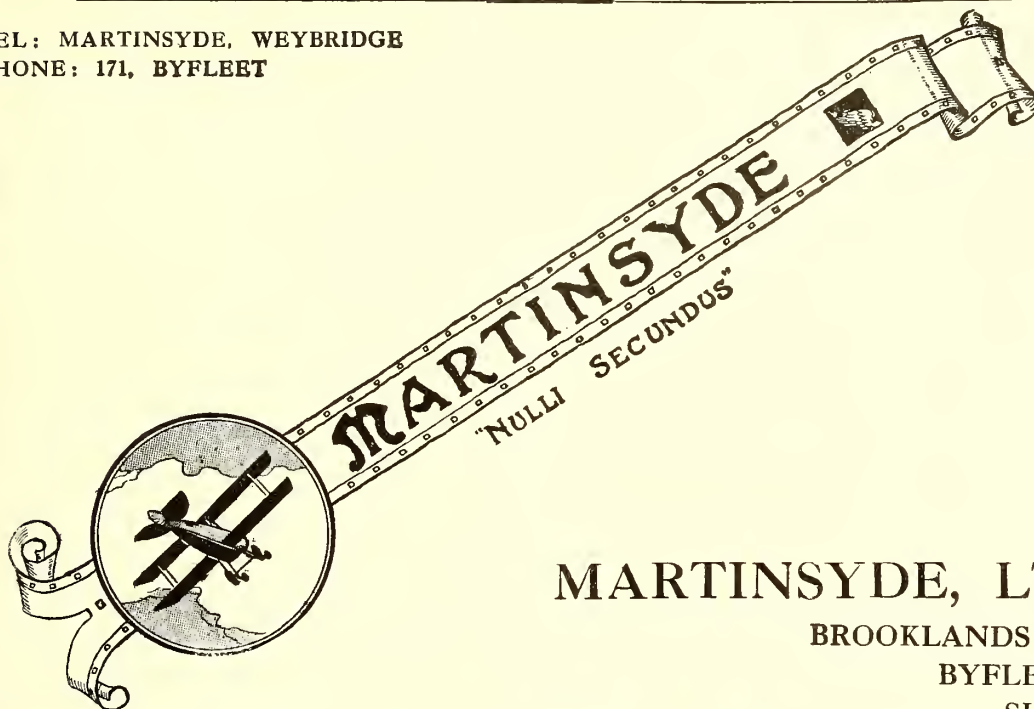
\* \* \*

The following daily rates of pay, including flying pay, are notified by Army Order for the new ranks of the Royal Flying Corps: Wing Commander, 38s.; Wing Adjutant, 27s.; Equipment Officer, 24s. 6d. Officers shall be appointed to be Assistant Equipment Officers, who shall receive, according to their classification, either (a) the ordinary rate of pay, without flying pay, provided for a Flying Officer, or (b) the rate provided for a Quartermaster. They shall receive in addition flying pay at the rate of 5s. a day for each day of ascent.

The following additional grades and daily rates of pay will be provided: Technical quartermaster-sergeant, 10s.; non-technical quartermaster-sergeant, 4s. 6d. Flying pay shall not be admissible in addition.

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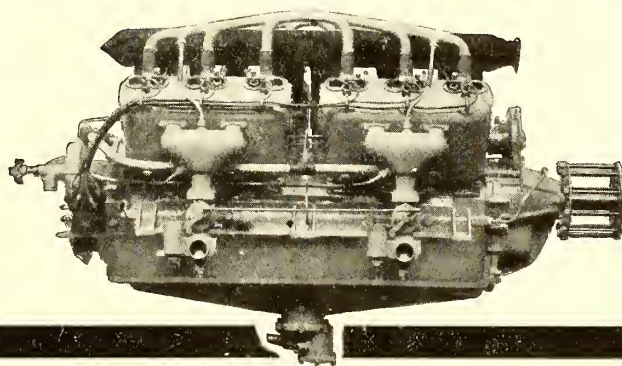


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The friends of Second-Lieut. Oswald Mansell-Moullin, R.F.C., who was reported missing after March 12th, will be glad to hear that he is safe, though a prisoner of war. His father, Lieut.-Col. Mansell-Moullin, R.A.M.C., has received a postcard from him from a German camp. He was permitted to state that on his homeward journey his engine stopped and let him down in the German lines, where he was at once surrounded by about 30 soldiers, who watched him coming down and just sat waiting to catch him. He was made prisoner, but, he says, "I managed to set fire to my machine as I was getting out, so she will be no good to them."—A highly commendable example of coolness in this young officer, for presumably he set fire to his machine by firing into the petrol tank, and he might easily have thus drawn on himself the fire of the troops who captured him.

When the accident happened Mr. Mansell-Moullin was taking part in the raid during the second day of the Neuve Chapelle affair which resulted in so much damage to the railway behind the German lines at Don, Douai, and Courtrai. Considering that he had never been in an aeroplane till after war broke out he must be a pilot of some considerable ability to be entrusted with such work, and one hopes he may still find a useful career in the R.F.C. after the war. Prior to joining the R.F.C. he was for four years Science Master at Dover College, and he is an M.A. of Cambridge.

\* \* \*

Certain papers having discovered during the past week that Lieut. G. W. Mapplebeck, D.S.O., King's Liverpool Regt., and Royal Flying Corps, had returned to England after having appeared in the Casualty List as missing, and later as a "Prisoner of War," one may perhaps elucidate the brief statement in this paper last week that one of the prisoners had returned. It would be contrary to the custom of the R.F.C. to descant at length on the story of his escape, but as the circumstances were somewhat exceptional it may be permissible to give a brief and innocuous account of the occurrence as told by a friend of the officer in question.

It appears that he was shot down in the vicinity of Lille—as the Germans know this there can be no harm in mentioning the place. He landed unhurt, and as the district is entirely industrial and is composed of small working-class dwellings close together, he succeeded in hiding in an empty house till his pursuers had disappeared. Knowing that it was impossible to return to the British lines through the network of trenches, he moved at night to another district where he procured food and a suit of workman's clothes. After lying hidden for many days he started and walked across Belgium—naturally running the risk of being shot as a spy if discovered—and ultimately succeeded in getting into Holland, where his travel-stained appearance prevented any suspicion arising as to his being a British officer. Thence he reached England with comparative ease. He has now returned to duty.

\* \* \*

A good story is told by the "Morning Post's" correspondent in the North of France on April 10th:—

One of our aviators had been turning his attention to a transport concentration point behind the German lines. A few bombs had been thrown, but, as usual with aeroplane projectiles, the moral and material effect was limited, so he determined to play a practical joke. He obtained and eventually threw over an old football. Down it went slowly enough, but looking big enough to blow the camp up. It swung this way and that like a torpedo. Yet it was not a balloon, for it dropped too quickly for that. Surely some dreadful new engine of destruction. The Germans fled panic-stricken in all directions, nor did they know where to fly, because the fearful bomb would swoop about now towards the right, now to the left. They were too scared to shoot, and when at last the ball struck the ground and proceeded to hounce high into the air there was not a German in the vicinity.

\* \* \*

It is stated that during his Easter visit to France the Bishop of London held a special service for the Royal Flying Corps in a hangar at — (deleted by our Censor).

The following extracts from the letters of an officer of the Royal Flying Corps are of interest:—

"On the first day of the attack (on Neuve Chapelle) I was up doing a reconnaissance, but saw very little of the battle, as most of the time I was flying in a driving snowstorm and couldn't see the ground. After a bit my petrol pipe broke and my engine stopped, necessitating a forced landing.

"The morning of the second day of the attack I went by motor to one of the siege batteries to arrange with the C.O. about co-operating with us. The roads were crammed with troops marching up to the trenches, chiefly Indians, and batches of German prisoners being led back under guard, and long lines of horse ambulances filled with wounded, many of them very cheery despite their wounds, the happy possessors of German helmets and other trophies. The six-inch siege battery I went to was in a regular nest of batteries, all keeping up a continuous bombardment of the Germans, by whom they were also being bombarded. The din was terrific. I got back in time for lunch and then did a reconnaissance with my observer over the battle.

"I was flying a rotten old machine, with an engine that runs very badly and was missing from the time I left the ground. Under ordinary circumstances I should have landed again immediately, but it was an important reconnaissance, so I had to do it. The highest I could get the machine to was 4,700 ft., and then as I flew towards the lines I could see our other machines up getting a hot time from 'Archie.' They were flying between 7,000 ft. and 8,000 ft., and as soon as I was in range the Germans opened on my machine, and then during the whole of the reconnaissance, which consisted of circling about a small area, they didn't give me a moment's peace and I had shells bursting round my machine the whole time, simultaneously flashes of flame and loud bangs, sometimes on one side and then on the other, below the machine, above it, behind, and in front, and some of them bumped the machine about unpleasantly.

"It was thoroughly uncomfortable. I twisted the machine about this way and that, made it side-slip outwards, and did everything I could to spoil their aim, but they kept me guessing the whole time. One shell exploded just in front, and I saw some bits of things flying off the engine and thought the propeller was gone. I was very glad when the reconnaissance was over. On landing I found that the machine had been hit by rifle fire as well as by shrapnel. [There seems to be a moral hereabouts for officers responsible for the upkeep or condemnation of aeroplanes.—Ed.]

"Yesterday I was up for over an hour trying to get in a reconnaissance, but there was mist from 400 ft. up and from 3,000 ft. thick clouds in which I was awfully knocked about by bumps. After flying some time at a bit under 5,000 ft. I thought I was behind our lines and shut off the engine and glided down to 3,000 ft., and when I could see the ground found I was well behind the German lines. They must have laughed when they saw the machine unsuspectingly appearing out of the clouds, and they greeted me with a tremendous fusillade of rifle fire and some 'Archies,' that didn't, however, come very near. I got into the clouds again as soon as I could, but had a warm time in doing so. They only succeeded in hitting the machine once or twice.

"... I have just got down from just under two hours in the air, during which my observer was photographing German positions. As regards your question of the height at which practical observation can be done, given a clear day after the height of about 6,000 ft. is reached there is very little difference between that and 12,000 ft., and after the first 6,000 ft. it would take a very practised observer to tell if he were that height or double that height. One can see everything perfectly clearly. The other day one of the observers took a lot of photos at 11,500 ft. thinking he was about 6,000 ft., and they came out very clearly. I have not yet been higher than 8,900 ft., as at present the engine of the machine that I am flying is not running well, but at that height one can see transport and troops perfectly clearly without field-glasses."

\* \* \*

AT SEA.

Lloyd's Edinburgh agent reports that the steamer "Staffa,"



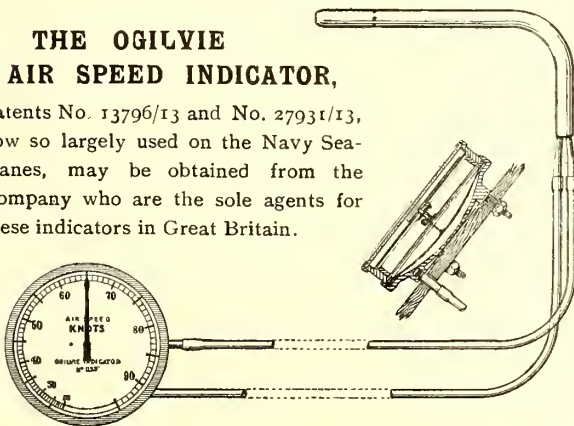
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from Rotterdam, was attacked on March 29th off the Hook of Holland by a German aeroplane. A bomb was dropped from a great altitude, but fell into the sea 15 ft. from the vessel, no damage being done.

\* \* \*

The officers and crew of the Cork steamer "Ousel," which arrived at Manchester on March 31st, report that they left Rotterdam at 2 a.m. on March 27th, and when 15 miles east of the Galloper lightship two German seaplanes were observed making for the ship. When over her at about 500 ft. they dropped 11 bombs, which fell into the water and exploded, throwing water as high as the masthead. The nearest bomb fell 25 ft. away. When the steamer was first attacked the captain and chief officer were on the bridge, and the course was at once altered to windward, and a zig-zag course steered to escape the bombs. Explosive rockets were got ready, but the seaplanes kept out of range. All the seamen stood by the life-boat in case the vessel should be struck, while the engine-room kept full steam up.

[The "head to wind" idea evidently arises from the standard trick against submarines. If one can get to windward of them they have to come up wind and receive the spray in their periscopes. Just what effect the skipper thought a similar manœuvre would have on aeroplanes is not clear.—Ed.]

\* \* \*

Captain J. T. Sharp, of the Cork s.s. "Serula," arrived at Rotterdam on April 12th after a combined attack by two German seaplanes west of the North Hinder Lightship. One small seaplane dropped 6 bombs which fell 25ft. away. Then a second and larger seaplane came over, also missing the ship with many bombs, which were thrown in sets of three. "After this the two made a combined attack, trying to nail us," said the captain. "They failed and they tried to come lower down, but I kept them high by a constant rifle fire, and hit the little seaplane in the right wing, so that it broke halfway (sic). They then flew back to Zeebrugge."

#### FRANCE.

The French official communiqué of April 8th contains the following:—

In the Bois de Montmare, to the north of Flirey, we gained a footing in the defensive works of the enemy. . . . To the north-west of this wood the cable of a captive balloon was severed by one of our shells, and the balloon drifted across our lines towards the south-east.

\* \* \*

The official communiqué of April 10th says:—

Our aeroplanes dropped 155mm. bombs on the maritime station and the foundry at Bruges.

\* \* \*

The communiqué of April 12th says:—

During the night of April 11th and 12th, about 1.30 a.m.,

a German dirigible threw seven bombs on Nancy. One fell near the civilian hospital and another near a school. Two fires were caused, but were promptly extinguished.

\* \* \*

The French official Eye-Witness in his narrative issued in Paris on April 7th deals with aircraft as follows:—

The first days of spring, with their longer light, have been marked by a recrudescence of activity on the part of our aviators. The official communiqués state that among operations more glorious and more directly efficacious they cannot mention the daily work of aviation on the whole front of the armies.

The Aviation Militaire has adapted itself to the necessities of position warfare. It co-operates regularly in the artillery actions which take place daily, its reconnaissance service furnishes the General Staff with precious information, and bombardments and the pursuit of enemy aeroplanes are among its essential and not least perilous tasks.

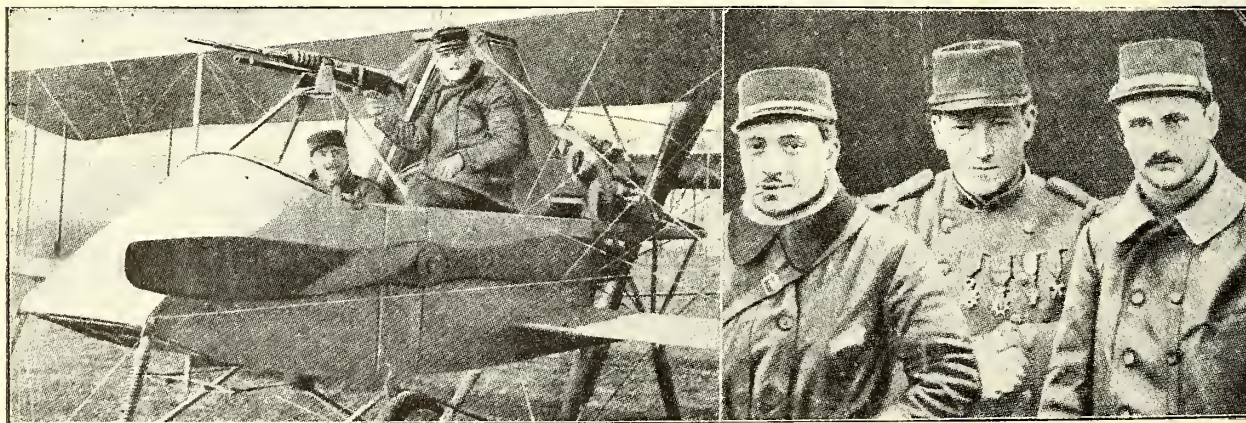
The story of a day of aerial operations will give some idea of the value of the effort furnished by this service. The work on April 2nd included 45 reconnaissances and 20 range corrections. Numerous photographs were also taken of the enemy's positions. The aerial bombardment operations were seven in number.

Between 5 and 7 a.m. an escadrille dropped bombs in Alsace on the Habsheim Aviation Ground, on the factory of Diet Willer, and the station of Walheim. At Bendorf a bomb of 10 kilos. was dropped on the station and 3 on the cantonments. At 6.50 a.m. seven aeroplanes flew over the Woivre as far as Vigneulles, where the Germans were constructing corrugated iron huts. These were riddled with bombs, which could be seen falling on the buildings. The aviation ground of Coucy le Chateau, north of Soissons, and the station of Comines, in Belgium, were also bombarded.

At dark other aviators ascended. In Champagne three 90-millimètre bombs were dropped on the station of Somme-Py and four on the station of Doutrien. The enemy bivouacs near L'Ecaille and St. Etienne-sur-Suippe were struck by 90-millimètre bombs, and on other bivouacs near Bazancourt and Pont Favreger our aviators discharged 1,000 arrows. Finally there is to be recorded the capture of an enemy aeroplane.

On April 1st two Aviatiks had already been brought down, one by a well-aimed carbine shot after a very hot fight in the region of Soissons, and the other above the valley of the Lys by machine-gun fire, which hit the tank and set fire to the machine. About 6 a.m. on April 1st one of our aeroplanes near Reims noticed an Albatros flying towards the city and chased it, firing effectively. The German descended in our lines and the pilot and observer were made prisoners.

It is by such constant and tireless activity and daring initia-



THE FRENCH FLYING SERVICE.—On left, one of the Salmson-engined Voisins, with machine-gun, and a spare propeller. On right, MM. Gilbert, Brindejonc des Moulinais, and Garros, the three popular heroes of the Aviation Militaire.



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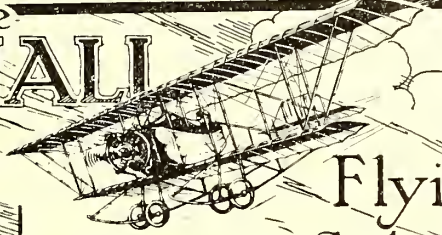
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tive that our aviators have indisputably achieved the mastery of the air.

[The difference between these activities and those of the Escadrille de Paris is somewhat marked.—Ed.]

\* \* \*

The correspondent of the "Daily Telegraph" at Boulogne reported that on Sunday, the 4th, a German aeroplane dropped bombs on Nieuwkerke Church, near Ypres. A number of the congregation were killed and injured. The Abbé Reynaert, who was preaching at the time, was hit by flying debris and fatally injured. The report is not confirmed elsewhere.

\* \* \*

The "Times" correspondent at Paris reports that at midnight on Sunday, the 4th, the torpedo-boats off Dunkirk observed a Zeppelin flying towards the town. Searchlights were flashed upon the dirigible, which immediately turned tail and flew in the direction of Ostend.

\* \* \*

An "Exchange" special, dated Paris, April 4th, says that M. Pégoud brought down a Taube on April 2nd in the region of St. Meneshoult. This is the third aeroplane brought down by him since the beginning of the war.

\* \* \*

Mr. A. Beaumont, representing the "Daily Telegraph" at Bâle, states that on April 5th, early in the morning, four French aeroplanes were seen over the Vosges and were pursued by several Germans. The French crossed the Rhine and then flew northward over Mulheim and Neuenburg, where they circled over the stations and barracks, which opened fire. Then they flew back towards Colmar and Mülhausen, dropping bombs en route. Next they followed trains on the line to Mülhausen, greeted all along by fire from hidden batteries, but they escaped, and dropped two bombs on the railway station of Napoleonsinsel, which demolished the rails.

Towards the evening four fresh French aviators appeared, and were flying in the direction of Illfirt when suddenly five or six German aeroplanes appeared from over Tullingen. The French aviators flew higher and higher, and for awhile disappeared from view. At 6.45 p.m. a French biplane reappeared over the Larg Valley, mistook the territory, and came down at Porrentruy. Almost at the same time a pursuing German aeroplane was seen coming from Altkirch, but when it saw the Frenchman had landed in Swiss territory it flew back.

\* \* \*

The "Morning Post" correspondent in Paris reported on April 8th:—"The main effect produced by the Zeppelin raid on Paris has been a general reduction of the lighting of the town. Experiments are still being carried out; more and more lights are extinguished every night, and aviators regularly look down and report upon the appearance of a city which is scarcely more lighted than the average town of the Middle Ages."

#### GERMANY.

The official communiqué of April 10th says:—

A captive balloon, which was torn from its moorings, came down, and was secured near Morchingen, outside the French lines.

\* \* \*

The Headquarters Communiqué of April 12th says:—

As a reprisal for the hostile air attack on the 5th on the open town of Muelheim, which is outside the fighting area, by which three women were killed, we bombarded Chanzry, the chief of a group of fortifications of the same name, with shells and incendiary bombs.

According to the declarations of French officers the cathedrals of Notre Dame de Paris and Troyes, the national library, the museums, the Maison des Invalides, the Louvre, and other buildings have been supplied with military installations, such as searchlights, wireless apparatus, and machine-guns.

[The inference here is that such buildings are now liable, under International Law, to bombardment by aircraft.—Ed.]

\* \* \*

Two German aeroplanes of the Taube pattern are reported to have been destroyed at Freiburg, Baden, while undergoing their first trials. The two officers piloting the machines were killed.

The "Frankfurter Zeitung" states that a hostile aviator dropped several bombs on Villingen on April 1st at 4 p.m., and that one bomb fell just behind a passenger train. The damage done was not stated.

\* \* \*

It is reported on the usual Geneva warranty that on April 4th the 10th Zeppelin built at Friedrichshafen since the outbreak of war was successfully launched. Which confirms the German opinion that output about balances losses.

\* \* \*

A Berlin telegram via Amsterdam, April 6th, states: "Yesterday evening (April 5th) a hostile aviator dropped two bombs on Müllheim, Baden, without causing any damage from a military point of view; three civilians were killed."

\* \* \*

It was reported from Basle on April 11th that on Thursday, in a storm, 13 French aeroplanes dropped bombs on the railway station and repair sheds at Habsheim. They were pursued by a squadron of Taubes, but dropped 3 more bombs on the windmill of Dietwiller.

\* \* \*

A correspondent of the "Times" who has been in Dusseldorf recently vouchsafes some illuminating information on the subject of Zeppelins. He says:—

"The Germans are utterly disappointed with their Zeppelins, which have not been able as yet to satisfy their wishes and fulfil their grand expectations. 'London,' they repeat, 'must be bombarded. What is the good of attacking small-coast towns?'

"At the end of 1912 Germany possessed more than 30 airships of different models. [She did not, nor anything like it, but perhaps 30 had been built in Germany since the start.—Ed.]

"I had the other day a conversation with a man who holds the patent of a special article necessary for Zeppelins. He was, by the way, one of the few Germans I have met who could speak about Great Britain without hatred and bitterness. In November last, he told me, about 35 to 40 Zeppelins were ready for immediate use by the Government. [The usual intelligent neutral's confusion of all airships with Zeppelins.—Ed.]

"When asked whether this number had increased since then, he answered:—

"'I am of opinion that we have just been able to replace our losses, which have been much greater than expected. But the coming six months will enable us to build 15 to 18 new Zeppelins—[Read, "airships generally."—Ed.]—of a greatly improved model, better armed and able to carry more than two tons of explosives. This air fleet is most likely being built for the purpose of reaching London. The building of the sheds was long ago begun in Belgium. London will not be approached by one or two airships, but by many, and quite regardless of possible losses. If we have not yet made an attempt on London, it is because our Zeppelins need special improvements as shown by experiments during the war. [Improvements which will be completed A.D. 1935, or thereafter.—Ed.]

"'It is also of the highest importance to the leaders of an aerial expedition to have before they start an exact knowledge of the meteorological conditions. It has hampered us greatly that the English authorities have not sent out any news about the meteorological conditions round the British Isles since war began. [Vide THE AEROPLANE some weeks or months ago.—Ed.] If the war lasts another year I should not advise you to remain in London, and, if you do, remember my warning, but personally I do not think there will be any Zeppelin raids on London before late in the summer.'

"I mentioned in an article four months ago that three air cruisers of the Schütte-Lanz type were being built at Mannheim. The last of these was finished in the first days of March and the trial trips have been satisfactory beyond expectations. These new air cruisers are said to be at least as powerful and trustworthy as the latest Zeppelins, in which half the Germans have lost faith because of the continual disasters. I have myself seen at Heidelberg one of the new Schütte-Lanz airships flying from Mannheim over Heidelberg to Baden-Oos (near Baden-Baden), which, besides being the base for two Zeppelins, is now in all probability the base for two of the newest Schütte-Lanz cruisers." [Good objective for a raid, Baden-Oos, if the Intelligence Department happens to know whereabouts the airship sheds are placed.—Ed.]

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**RUSSIA.**

The following statement issued from the Main Army Headquarters was published at Petrograd on April 7th :—

On April 4th a hostile aeroplane dropped two bombs on our hospital near the station at Radom. The explosion which followed smashed the window-panes in the hospital and slightly wounded a soldier. On April 2nd and 3rd an Austrian aeroplane dropped five bombs on the hospitals at the station of Jaslo. On April 2nd bombs were dropped while wounded were in a hospital train.

[It would be over-rating the ability of bomb-droppers to assume that they aimed with such accuracy at the objects damaged.—Ed.]

\* \* \*

The communiqué issued in Petrograd on April 8th contains the following :—

On April 6th . . . near Libau a German seaplane was sunk, and the aviators, who had devoted their energies to the dropping of bombs on the peaceful town of Libau, were rescued by us and made prisoners.

[Libau is, of course, an important naval and military station.—Ed.]

The official communiqué of April 9th says :—

On the right bank of the Vistula Cossacks brought down a German aeroplane. The two aviators were taken prisoners.

**ITALY.**

According to the "Scientific American" of March 27th, a large order for aeroplanes adapted for war purposes is said to have been recently placed with the Curtiss Aeroplane Company by the Italian Government. These machines are to be of 100 horse-power, and are to be fitted with wheels for starting on land, and also with pontoons to enable them to be used at sea. They are to be capable of sustaining about 400 pounds, and are said to cost \$7,500 each. It is understood that a large number of these machines are under order, and the Curtiss Company has two representatives with the Italian naval aviation corps to see that the fliers are properly set up and prepared as they are delivered.

**BELGIUM.**

The "Tyd" learns from Sluis that on Thursday, April 8th, Allied aviators appeared over Knocke, dropping seven bombs, with what result is not known. The Germans shot several fire arrows, which at their greatest height sent out numerous fire-balls, brilliantly lighting up the sky. Nevertheless, says the journal, the Germans were unable to locate the enemy aviators.

[Probably the "arrows" were ordinary rockets.—Ed.]

\* \* \*

The "Telegraaf," Amsterdam, April 10th, states that the Belgians recently shot down a Taube aeroplane near Pervyse. The two aviators were killed. Also a Taube caught fire at Aerseele, near Tirmont, and was compelled to descend.

\* \* \*

The "Telegraaf" learns from Turnhout that a British aviator was forced to land between Malines and Herenthals, and was captured by the Germans about April 2nd.

Allied aviators reconnoitring over Flanders dropped some bombs in the direction of Aalteil and Thielt.

**HOLLAND.**

Reuter's Ymuiden agent reports that the steam trawler "Batavier" at 2 a.m., 10 miles north-west of the isle of Vlieland, picked up a test balloon sent out by the artillery school at Jüterbog, near Berlin.

\* \* \*

The "Daily Telegraph's" correspondent at Rotterdam telegraphed on April 6th that the coastguard at Ymuiden reported that off Noordwijk a large balloon, probably a captive balloon which had broken loose, had been sighted floating. It was believed the crew was on board. Two Dutch torpedo-boats left Ymuiden in search, also the lifeboat from Noordwijk.

[Probably two versions of the same yarn.—Ed.]

\* \* \*

It is reported that the export of "flying machine chassis" from Holland has been forbidden. It is news to most of us that Holland exported aeroplane parts. She has exported several fine pilots and designers, but not aeroplanes.

It was reported from Amsterdam on April 12th that a Zeppelin passed over the Dutch island of Ameland on that day in a westerly direction. A second Zeppelin was sighted the same evening near Ameland, also in a westerly direction.

**MONTENEGRO.**

A telegram to Milan on April 9th, from Montenegro, via Bari, says that Austrian aviators took advantage of the famous Easter Monday popular fair at Podgoritz to throw seven large dynamite bombs on an innocent holiday crowd. Twelve persons were killed on the spot, and 48 others, principally women and children, were wounded, and had to be taken to hospital. Many houses, too, were wrecked.

The aerial "assassins" also threw bombs on the old town of Antivari. Six aeroplanes took part in the raid, and 22 bombs were thrown, considerable damage being done.

**SWITZERLAND.**

The German authorities have suspended traffic on Lake Constance for a grand rehearsal of the measures which they have adopted with a view to defeating any repetition of the raid conducted by British aviators on Friedrichshafen.

\* \* \*

A Central News Agency telegram from Lausanne, dated April 6th, reports that a French aviator, who was being pursued by two Taubes, landed yesterday in Swiss territory. He was interned.

\* \* \*

The "Times" correspondent at Delemont reports that recently a French military aeroplane flying to Belfort came to earth at Perrentruy. The machine was sequestered and the two aviators were interned.

**TURKEY.**

An "Exchange" telegram states that it is learned from a private source that a seaplane, whose operations were followed by a British destroyer, flew over the forts at Smyrna on Saturday, April 3rd, and dropped bombs. The same afternoon a British battleship and destroyer, escorting a seaplane carrier, bombarded Castro and the Two Brothers.

\* \* \*

The "Messaggero" learns from Dedeagatch that since March the Germans have supplied a squadron of Taubes to Turkey. These are the machines which have recently been carrying out reconnaissances above the Dardanelles and the Bosphorus.

[The Taube of Peace is what Turkey is likely to want in about a month or so.—Ed.]

**EGYPT.**

The following statement was officially issued in Cairo on April 8th :—

Yesterday morning about 10 a.m. a small body of Turkish cavalry were seen by our patrols some few miles north-east of Kantara. . . All aeroplane reconnaissances show that there were no other bodies of troops within reach.

**SOUTH AFRICA.**

A Colonial soldier in German South-West Africa writing home says :—"Our old friend the Taube was round again last Sunday. He dropped four good-sized naval gun shells this time by way of a change. The shells all fell in line about 100 yards from my tent, and a piece of a copper band about 4 inches long went zip through the canvas. A fellow in the Pretoria Regiment who was making a bolt for a trench had not time to reach it, and he fell down flat where he was till the first shell had burst, and as he was getting up to go on the second shell burst, and a big chunk got him under the shoulder blade and lodged in his lung. The poor fellow was groaning and complaining it was burning him, and don't wonder either, as bits we picked up were too hot to handle. This fellow died later on in the day."

**NEW ZEALAND.**

The following appears under the "Personal Notes" of the "Auckland Weekly News" of February 18th :—

Mr. J. D. Dinneen, B.A., of Remuera, who has been a member of the Auckland Grammar School staff for some years, left Wellington last week by the steamer "Remuera" for England with the intention of studying for the pilot's certificate in aviation and qualifying himself for service in the Military Wing of the Royal Flying Corps.

## AUSTRALIA.

From the "Argus," Melbourne, Wednesday, February 24th:

The assistance of the Commonwealth Defence Authorities has been sought by the Indian Government in providing military aviation officers and equipment for active service, and the Minister for Defence announced last evening that the Commonwealth had undertaken to meet the wishes of the Indian Government in this matter. "The Indian Government," said the Minister (Senator Pearce), "eabled to us some time ago asking our assistance, and as a result of communications we have decided to send to India two or more aviators, with a full staff, consisting of mechanical transport and supplies. The equipment to be sent will include a travelling workshop, transport vehicles, and horses. The Indian Government will supply the aeroplanes." While the personnel of the aviation corps has not been definitely settled, it is understood that it will be in command of Capt. Petre.

## U.S.A.

The Construction and Repair and Steam Engineering Department of the United States Navy has asked for bids on hydro-aeroplanes and power plants from a number of the leading aeronautical constructors in America.

It is said that in these tests the machines must qualify in the following respects, and the decision as to merit of design will be based on the following points, in the order given: Speed, radius of action, climb, glide, and streamline. The merits of the power plant will be considered from the view of propeller efficiency, fuel consumption, weight, and compactness.

The machines must be armoured, two-seated hydro-aeroplanes of standard navy grey colour, with enclosed streamline fuselages protecting the pilot and observer, who must have dual controls and a clear view in every direction.

Fully loaded with pilot, passenger, gas, oil, water, and rations, the machines must be able to carry for a four-hour flight the following equipment:—

A mounted machine-gun and ammunition, instrument board, including a watch, inclinometer, tachometer, barometer and speedometer, compass, drift indicator, sextant, chart holder, incidence indicator. Also a sea-anchor and line.

All parts of propellers, engine, wings, and frame, all aluminium, wood, and other metal parts, must be thoroughly protected from spray and the corrosive action of salt water. Portable covers must be furnished for the power plant and the cockpit.

With the weight of the full equipment mentioned, the machines will undergo a four-hour test at full speed, and must have a safe range of speed from 50 to 80 m.p.h. They will be required to climb to an altitude of 2,500 feet in 10 minutes and to have a gliding angle of at least 6 to 1 in gliding tests from 1,000 feet high. Trials will also be made under "half load" and "light load" conditions.

The dual controls must be operated by duplicate wires to all controlling surfaces, running in different leads. The hydros shall also be provided with a single eye, above the planes, for hoisting or lowering from a ship; they must be constructed to withstand the strains of launching from a catapult device and the shocks of rough landings.

A low swinging truck, capable of holding the aeroplane securely, and of being used on any ground, is to be provided with each machine.

All hydros must be designed to be quickly demountable for transportation, having the planes capable of being removed or folded, and the double-magneto double-ignition power plant readily accessible at all times, and capable of being started, controlled, or stopped from either seat.

Besides the fuel for a 4-hour full-speed test flight, provision must be made to carry 200 lbs. of additional gasoline in the bulkhead divided tanks. The propellers should exceed 70 per cent. efficiency, and must be protected and held by a safety nut as well as the regular bolts.

While the motor alone is being tested in different positions for power and speed and also on a 4-hour full-power run 10-minute records will be kept of its actions. It must be able to run smoothly if the machine is upside-down or in any other condition. Before the acceptance tests, each machine shall be tested as above explained, observed by a Naval Inspector.

When these demonstration trials have been passed the machine will be given acceptance trials at the U.S. Naval Aeronautic Station, Pensacola, Fla., in which trials the machine must ride adrift or at anchor, normally heading into a 25-mile wind, in the open sea, for 4 hours. The machines must be sensitive of control at low speeds, and should be provided with fittings for towing and mooring.

With the engine throttled down to one-quarter at the start the machines shall be able to rise in 1,500 feet on calm water; on open rough water they should be capable of planing at less than 20 m.p.h., of rising readily and alighting safely, and should be able to alight before the wind at high speed without any danger of nosing under.

The hulls or floats must be of efficient form, able to withstand the strain of sudden landings and rough usage, and should never skid on turning or running across wind and sea.

The hydro-aeroplanes must have sensitive, efficient, lateral, longitudinal and directional controls in strong and variable winds, must be able to bank steeply, recover quickly, and glide easily in case of sudden motor failure in climbing.

The machines are to be delivered in pairs at the Naval Aeronautic Station, Pensacola, Fla., the first delivery consisting of one-third of total number, to be delivered not later than April 15th, the remainder by June 15th, 1915.

Satisfactory complete plans are required, to be furnished in triplicate, the general arrangement of aeroplane and power plant drawn one inch to the foot scale, the details of planes, hulls, power plant and transmission must be drawn three inches to the foot.

[The machine that passes these tests will be, in its native vernacular, *some* seaplane! The thoroughness of the specification gives one a horrible suspicion that the U.S. Government means to take aviation seriously, but doubtless the Politicians will spoil the efforts of the Services as soon as the European War ends and the "Burden of Armament" cry breaks out again.—Ed.]

\* \* \*

The Thomas military tractor biplane is proving itself a very useful contribution to the list of seriously designed and constructed Service aircraft. Lately it has exceeded all the U.S. Government requirements, carrying two men, 250 lbs. of petrol, and 25 lbs. of oil to 4,000 feet in 10 minutes. As the machine is fitted with a 90-h.p. Austro-Daimler engine the load would represent about four hours' fuel.

The Thomas Brothers have installed an up-to-date plant at Ithaca, N.Y., and their capacity just at present is one machine per week—delivery in 30 days from acceptance of order—though they are so situated that their output can be easily increased.

\* \* \*

From the "Hamilton Spectator," Hamilton, Ont.:—

Dayton, Ohio, March 25th.—Military aeroplanes almost as safe as rocking-chairs will be turned out by the dozen at the Wright factory here within a few months. "Our new stabiliser, enabling an aviator to preserve his equilibrium with scarcely any effort, has been given the finishing touches," said Orville Wright to-day. "We could have commercialised it a few weeks ago, had we not been rushed with orders for the armoured military biplanes now so much in demand." The new device invented enables the air-pilot almost to disregard treacherous air-currents. Automatically, a biplane struck by a wind gust will right itself. Military pilots whose machines are so equipped may concentrate their attention on the foe below. But Wright modestly refused to forecast the effect upon modern aerial warfare of his invention. "We have no opinions at our factory," he laughed. "Building aeroplanes takes all our time, but I'll admit that our new stabiliser will make some important change in the work of the army aviator. Just now we are working full time turning out our standard military type of armoured biplane. What nation gets our machines after they leave our factory we don't know; the shipping orders are executed after the biplanes leave Dayton. We are not sending any hydro-aeroplanes to Europe. They were tried out early in the war and were failures. The greatest demand is for the planes that carry 1,000 lbs. and climb to high altitudes, at the same time possessing maximum qualifications for speed."



## CANADA.

From the "Calgary Daily Herald":—

Calgary Boys in Aviation Service.—J. Turner Bone and Spencer Kerby, who left Calgary for England a short time ago with the view of joining the Aviation Service, have announced by Marconigram that they have both been appointed probationary flight lieutenants of the Naval Wing. Considering that these young men only landed in England a week ago, they are meeting with a marked amount of initial success.

## THE ARGENTINE.

From the "Standard," Buenos Ayres, Monday, March 15:—

San Martin was the principal venue of local aviators yesterday on the occasion of the second auto sports of the season. The inclusion of aeroplane manoeuvres in the programme added considerable interest to the meeting. Sr. J. Domenjoz signalled his return to the city by performing the spectacular "looping the loop" and upside-down flying. Other aviators who took part were pilot C. Francisco Borcosque, with Mr. E. Rogers as passenger, who flew from the San Fernando aerodrome on the school 50-h.p. biplane. Don Pablo Castabert, who flew from the Villa Lugano Civil Flying School on a monoplane of his own construction, accompanied by the popular local comedian, Señor Parnavicino. Pilot-instructor F. Sanchez, of the Quilmes aerodrome, also took part in the meeting after flying over from the Stadium Palermo, where his machine was housed overnight after his successful night-flight on Saturday evening.

At Palermo yesterday evening the inhabitants were startled by the sight of the intrepid airman flying in his illuminated machine, which was visible for miles. After hovering (sic) over Plaza Mayo for the space of a few minutes he descended amidst the plaudits of the spectators. A further short flight over the stadium was accomplished with lights out in perfect safety.

From the "Buenos Aires Herald," Friday, March 12th:—

José Scapuzzi, mechanic at the La Plata Arsenal, lost his life in the Rio Santiago by falling from a plank leading to the destroyer "Espera." He is much regretted, being not only a clever mechanic, but an aviator of considerable ability. He was 26 and an Argentine, but had been much abroad in France, England, and Scotland, where he had studied aviation in which he specialised. He assisted at the exhibition at Olympia when in London and made flights in France. He was about to undergo an exam. at Palomar for his Argentine pilot certificate. [Evidently aviation is progressing in the Argentine, and may be well worthy of attention after the war.—Ed.]

## The R.N.A.S. Comforts Fund.

Apparently many people think that because there is some prospect of warm weather in the not far distant future, therefore all need for warm garments and bodily comforts is now past, and so there is no further need to contribute to the Fund either in cash or kind. This is far from being the case, for a request has been received by Mrs. Sueter from the officer commanding a newly commissioned seaplane-carrier for close on 3,000 assorted garments for his men. This demand is sufficient to clear out every one of the garments required which is at present in the possession of the Fund, and also to absorb all the balance of the Fund's cash in purchasing others which are not in stock.

The garments required are vests, pants, flannel shirts, socks, and jerseys, but not mufflers or gloves. Therefore those who cannot make the required garments will do well to send cash contributions, no matter how small.

1674 garments have already been sent to the seaplane-carrier in question, but nearly as many again are still needed.

Up to date 129 sacks and cases, containing 13,459 garments, have been sent by Mrs. Sueter to the R.N.A.S. Squadron-Commander Robertson, R.N., commanding H.M.S. "Riviera," writes thanking Mrs. Sueter for garments sent to his ship, and letters are constantly received showing how much the men appreciate the kindness of those at home.

As this paper goes to press Mrs. Sueter notifies the following subscriptions: Mrs. Sueter, £5; Mrs. C. G. Jacob, £3 3s.; Woodworkers, Vickers Ltd. (17th contribution), 6s.; Children

of Cathedral School, Ripon, 2s. 6d. Bringing the total to date up to £916 os. 10d.

The present writer has heard it said by certain people connected with the seaplane trade that there is no further need to contribute to the Fund because stations have been thoroughly stocked up with all sorts of garments, and that the men are so well paid that they can well afford to buy what they want in the nearest town. This idea apparently arose from irresponsible gossip and seems to have originated through someone, possibly interested in other directions, finding out that one particular station had asked for more than the men there actually needed, so that a certain number of garments have been held over and have not been served out. The fact that the men are well paid has nothing whatever to do with the question, because very many of them have other people dependent on them, and if they are presented with some garments by the Fund it leaves them so much more in hand to assist those they have left at home.

It will be well to take no notice of such statements, for Mrs. Sueter is closely in touch with all stations and is quite capable of judging when the time comes to relax the Fund's efforts.

Will all readers please make a special effort this week to send a contribution, no matter how small, to Mrs. Sueter, The Howe, Watlington, Oxon?

## The Royal Flying Corps Aid Committee.

The following letters, taken from among many similar communications, show how much the N.C.O.s. and men of the R.F.C. appreciate the gifts sent by the Aid Committee, and are distinctly encouraging to those who have contributed:—

"Dear Madam,—Just a line in acknowledgment of receiving a 'gift parcel' from the Royal Flying Corps Aid Committee. I received this a week or more ago now, but until last night I have not answered, as writing is one of the things. I would always rather do to-morrow. I can't keep putting this duty off though, and so I now take this favourable opportunity of answering your invitation and thanking you for your kind attention to the sending of comforts to us men out here."

"I am sure the R.F. Corps is a very lucky corps for having such a Committee to give thought to our needs, and must say the selection is generally of those things which are most required. I have learned also that the tobacco must be of a different species to that obtained out here, as it is always greeted with one of those smiles that won't come off, whereas the Frenchman's kindly offer of a pipeful is met with a few words of (sometimes) an unknown language (which might be meant for French) but in any case means 'No thank you.' Well, in my concluding lines, I must express my hope that all the other corps and regiments have an Aid Committee with as much energy as the R.F.C. I'll close, again thanking you for your kind present and thought.—I am, Madam, Your obedient Servant,  
SERGEANT ———."

"Dear Madam,—I received your parcel on the 9th and was very pleased with it, as were all the fellows in the room of our billet. The things you send all come in useful and seem to come at the time when they are most needed. When this parcel came nearly everybody was out of cigarettes, and so they came in very useful.—I remain, Yours, etc."

"Dear Madam,—It is with the greatest pleasure I return this little note to convey my best thanks for your gift parcel, just received, the contents of which are very much appreciated and serve our purpose very well. This is the second I have received and have been well served with each, especially the socks, as we are very hard on them. Best regards from a  
SOLDIER AT THE FRONT."

"Dear Lady Henderson,—I received parcel to-night and must thank you and contributors very much for same. I do not think anyone could have made up a better parcel of goods to send out here. Everything seemed to be just what was wanted, even to the pipe, for I had just broken the one I had. I am a 2nd A.M. in Squadron No. 9, and you have my heartfelt thanks for your kindness.—I am, Yours truly."

Further contributions should be sent to the R.F.C. Aid Committee, 3, Marble Arch, W.

**Flying at Hendon.**

On Saturday, a very fine and bright day, with a slight wind of 10-15 miles an hour, exhibition flying commenced at 3 p.m. and continued practically without a break until dark. Mr. Manton made the first flight of the afternoon on the new 70-h.p. Grahame-White biplane, a well-built passenger-carrier; shortly afterwards both he and Mr. Winter ascended on 50-h.p. G.-W. School machines to a considerable altitude.

Mr. Graham made a good flight on "Lizzie," followed by Mr. Hall on a 45-h.p. Caudron; Mr. Baumann then brought out the 60-h.p. Ruffy-Baumann biplane, making a very fine flight up to 2,000 ft., and Mr. James, of the Ruffy-Baumann School, also gave an exhibition flight on a 45-h.p. biplane.

Mr. Roche-Kelly, who is now a notably good pilot, gave a magnificent display of banking on a 50-h.p. Beatty-Wright biplane, which was applauded with great enthusiasm by a considerable gate.

Mr. Manton finally made a flight in the 100-h.p. Green-engined Grahame-White "aero 'bus" with four passengers on board, this being the third different machine he had flown during the afternoon. Meantime, numerous Naval pilots on Maurice Farmans, Avros, Sopwiths and other machines continued their training and added materially to the interest.

Sunday was a magnificent day for flying, there being no wind, although the sky was somewhat dull. At 3.30 p.m. Instructors Osipenko and Winter went up on 50-h.p. G.-W. box-kites. Mr. Manton took up sixteen passengers—four on each occasion—in the G.W. "aero 'bus." These passengers were mostly officers of the Navy or Army, and the number of soldiers in the enclosure also testified how keen is the desire in the Services to learn as much as possible about aviation.

One feels that by admitting men in uniform free the Grahame-White Co. is doing really valuable educative work, for there are so many different types of aeroplanes in use at Hendon that it is possible to learn quite a lot about the characteristics of various machines in a comparatively short time.

During the afternoon there was a great deal of flying, on several occasions nine or ten machines being in the air simultaneously. Messrs Roche-Kelly, Bransby-Williams, Junr. and Beatty gave combined displays on 50-h.p., 40-h.p. and 60-h.p. Beatty-Wright biplanes respectively. Mr. Hall, on a 45-h.p. Caudron, and Mr. Baumann, on a 60-h.p. Ruffy-Baumann, also

made excellent flights during the afternoon. Later on school work commenced, and, be it said, from the point of view of the man who wants to learn something about flying, school work is as interesting as the manoeuvres of crack pilots.

With the approach of the fine weather, and the amount of flying that is likely to be done, Hendon is well worth a visit any Saturday or Sunday afternoon; and the special exhibition and passenger flights that are made there regularly certainly cause an afternoon at the London Aerodrome to be exceptionally interesting.

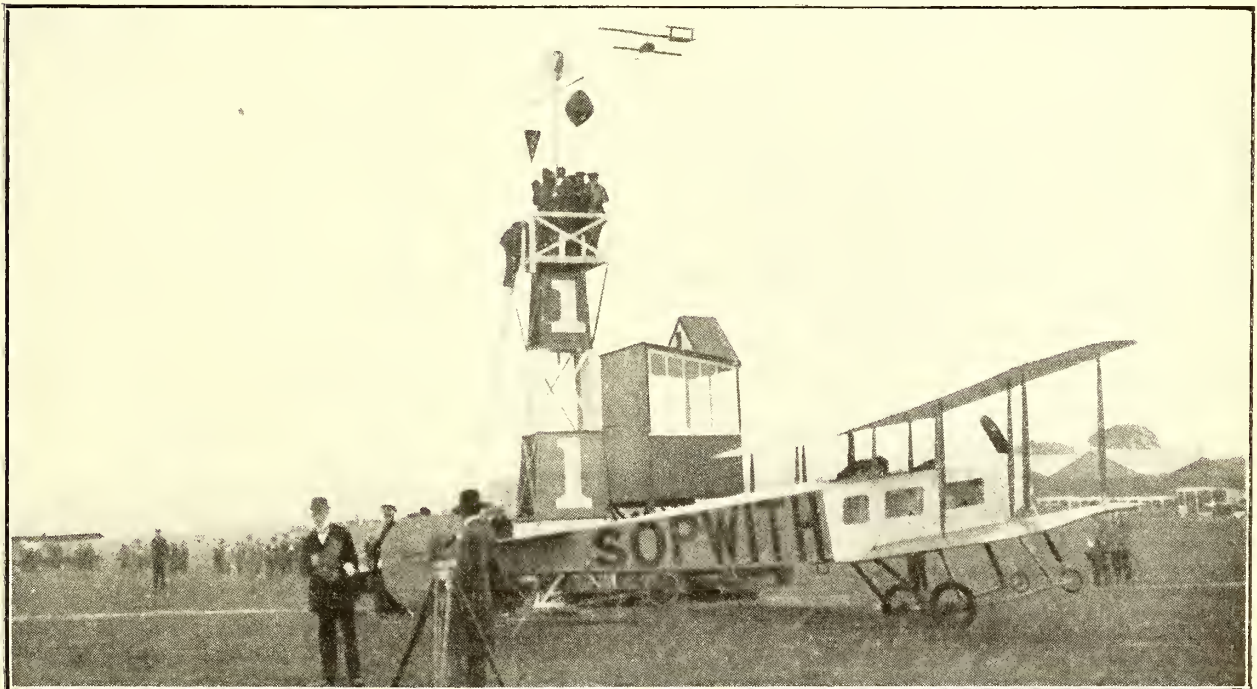
**An Important Change.**

Official notification has been received that the partnership of Messrs. Martin & Handasyde has now been turned into a limited company under the name of Martinsyde Limited. The address of the firm will be Brooklands, Byfleet, as usual, but much larger premises have been secured in a neighbouring town where parts will be turned out in order to increase the output of the Brooklands works.

One hears exceedingly good reports of the behaviour of the Martinsyde scouts on active service. These machines are not so fast as some of the other scouts of similar type, which is only natural when one takes into consideration their extra weight, consequent on their extra strength, and their stout and elaborate chassis. This type of chassis has been fitted on account of its extra strength, so that the machine may be used by pilots who are not as gentle with their controls as the crack fliers who are detailed for the faster scouts, and the way in which the Martinsydes have stood up to numerous smashes in this country shows the soundness of the policy of keeping the faster machines for the picked pilots.

The present writer had the opportunity of seeing the new type Martinsyde 2-seater the other day, and was particularly struck by its obvious strength. Pilots who have flown in it state that this machine is to all intents and purposes inherently stable. Mr. Raynham has made a descent, accompanied by a passenger, of several thousand feet with the engine stopped and without touching any of the controls, which seems a fairly good proof of stability.

The makers state that the machine is not as yet perfected, but it certainly strikes one as being able to hold its own with anything of its kind at present in the possession of the R.F.C.



**A REMINISCENCE.**—The Winning Post at Hendon on a busy day last Summer. To day Hendon is busier than ever in the air, but the ubiquitous Press Photographer is not let loose among the Naval aeroplanes.



## Aero-motors: In Kind and Construction.—(Continued)

BY GEOFFREY DE HOLDEN-STONE.

### The Designing Mind.

Sympathetic imagination—without bounds or bottom—as to the inside needs of the proposition, is the main thing required of the aeromotor designer. Otherwise he had better stick to component-shifting for an Olympian reputation. For the praised triumphs of automobilism are rather less than unhelpful to him, and are best forgotten. He must really begin with the absolute craft-elements, the clay, wires, and laths of it to build up the new conception. Only he must know in very definite detail how to shape it, as nothing is more useless than the vague ideal, tailing off into the commonplace. Which of course means that he must know exactly what is wanted and why; and sorting out the superfluities and incompatibles, make the elementary bits and pieces agree without forcing or forging anything. Without imagination to guide his choice, all the formulæ, all the stale records of current practice ever printed will inspire nothing worth while.

But imagination must begin to sympathise with material fact very far back of the actual motor. For instance, the root requirement is light weight, not only in the power-plant, but all on, so as to ensure the longest possible flight radius out and back. Obviously that can only be obtained on a given maximum tank-load by getting the most out of it. Comes the question then, air or water-cooled, from one point of view. There is also the further necessity of continuous torque without vibration or couple; an apparently attainable ideal so far, at least. Likewise power embodied with the utmost compactness, also practicable enough. This last requirement seems to narrow down the proposition to one of two types, rotary and air-cooled, or radial and water-cooled. That—though probably not the only one—is at least the most obvious choice.

### Pro and Cons of Rotaries.

There then, is the rotary. Considered by itself, apart from its work, it may be a trifle the lighter for its power, so long as its power-output is maintained. Which at once demands the most serious consideration of the probabilities; of the circumstances that may affect that power-output maintenance adversely. Also of the efficiencies of consumption of petrol and oil; which make such a difference to mileage flown or flyable on that given tank-load. Likewise again, the mechanical and physical habits and qualities—not to say idiosyncrasies—of the rotary type. Flexibility at least—as we have already seen—is not and cannot be among its virtues. Which defect imposes certain grievous restrictions and limitations; notably in the matter of being unable to fly slowly with throttled engine. Its consumption-record—apart from its likes and dislikes—is but so-so, in any make; though how far inherently so, remains to be seen. And simple and effective as the mechanical design of any one of the type undoubtedly is, experience does not encourage the belief that any one of them possesses the workaday virtue of being easily kept in first-class running trim and tune by the average motor-mechanic. Lastly, comes the highly debatable question whether they do not, merely as rotaries, heavily decrease the efficiency of the “wind-stick” over what ought to be the best part of its length, by their own air-disturbance! Nevertheless, the rotary type has its peculiar virtues as the ascertained evidence shows.

### The Canton-Unné-Salmson System.

Let us then examine the evidence—the external and obvious to begin with—in regard to that most remarkable of the few existing examples of the radial type, the Salmson or Canton-Unné; which, in view of its adoption and development in this country by the Dudbridge Ironworks, we may henceforth call British to that extent. Its sponsors have at least appreciated the merits of its design so far as to leave it unaltered, and have confined themselves to making the best of its construction.

Certainly there seems to be a lot of it, both in detail and mass; so much, indeed, as to raise the question of wind resistance as compared with the rotary. But apart from the illusion which makes a rotary in motion seem smaller than it is, actual measurement of the Salmson circle proves its diameter to be only slightly, if at all greater than that of any rotary of similar power. On the other hand it is highly doubtful

whether the united wind resistance of its seven or nine stationary cylinders, larger though they be, and the cooling arrangement, absorb more power than is expended in rotating a rotary inside a cowl.

### The Soul of the Salmson.

Again, as a non-rotary, there is no centrifugal force to vex the question of carburation, mixture-feed and gas-flow. It is indeed no more a question than if its seven, nine or fourteen cylinders were so many verticals or V's; and the same general working principles consequently apply to the same degree, we have at once all the known mechanically derived advantages of positive inlet-valve operation and control that so notably assist flexibility. Otherwise—as with the others—gas-inertia would seem to be the only consideration. But in this and every other respect—solely because it is a radial motor—efficient carburation happens to be less of a question with the Salmson than with almost any other type of four-stroke motor. The reason, first and last, is that all the cylinders can be—and are—fed from a single circular induction hoop, with a tangentially set lead to each one.

Now, apart from any mechanical advantage of absolutely true radial torque—to be discussed later on—this unique physical feature of the Salmson gives the following definite advantages to an exceptional degree. First, the mixture is free to circulate continually within the hoop at all velocities without any possibility of backlash; which experience has shown to be the bane of practically all conventional induction systems of either V's or vertical types. This alone gives peculiar smoothness of running and flexibility; and the consequently more regular pull on the carburettor naturally tends to economise petrol, and prevents “ponding” or flushing. The further immediate result is a better graduated, more homogeneous and potent mixture. Then the length of mixture-travel in the hoop tends to steady its velocity whatsoever it may be at the moment; which, besides making again for economy, prevents the mixture-hunting which is set up by gas inertia in the ordinary way under sudden variations of motor-speed, and is liable to upset regular carburation. Even these few initial results would ensure exceptional economy.

But from these still others arise to the same end. Wire-drawing and cylinder-starvation are clearly made impossible. And the gas-flow being given, we notice, the exact tangential course which fluids set in circular motion naturally take—try it in your bath and see—to each cylinder, it follows, first, that there is nothing to upset the homogeneity of the mixture. Consequently the full power must be got out of each cylinder charge, be it little or much. Which means, of course, a greater power output—in comparison with conventional induction systems—for any given volume of entering mixture; or, in other words, equal power with closer throttling. And that, apart from the obviously greater fuel economy resulting, must clearly and finally mean a longer throttling—and consequently flexibility—range.

Thus one sees the all-important part imagination plays in foreseeing the idealised results beforehand, that can be persuaded to grow from the sympathetic treatment of a single elementary detail. Incidentally, we may also see, step by step, how the Salmson motor has combined to make such a consumption record as half-a-pint per horse-power hour under official test.

### Detail Design Points.

Yet this is not the whole of the story arising out of the Salmson's “radiality” and its meritorious induction hoops. There are few more vexatious problems in motor design than that of providing adequate valve areas, especially when copper water-jacketing is desirable—in aeromotors essential—for lightness' sake. This last matter alone involves serious constructional considerations, apart from any other important relative details of design. As more than one expensive failure has shown, the electrically deposited method is too tricky to be even reliable, still less commercial. The tacking-on fashion, too, besides costing valuable time, looks like upholstery, not engineering. The separate trefoil-shaped head-casting would,



of course, give ample valve-areas; but apart from any inconvenience of water-connecting—a free-flow being literally vital for an aeromotor—and gasketing, it would not agree with the indispensable induction hoop. Or one might, indeed, have diagonally set valves, back and front, operated by a single rocking beam, pull-down tappet and single two-ramped cam. This arrangement could readily be made to agree well enough, not only with the induction hoop and the exhaust collector, but also with the very craftsmanlike Salmson method of having the copper jacketing brazed on a wire sunk in a groove cut in the casting, to make a tight joint, as such joints could as well be made around the insertions of both valve-boxes. Only the question would then be how such cams would agree with the fundamental valve operating scheme of a radial motor, or whether the cam sleeve would not need to be unduly lengthened.

Personally, I think that it might all be done well enough; might even simplify the design and strip out so many tappets and rockers. But the point is that it is not necessary; for with such an induction system no larger valves are needed than there is room for in a circular combustion chamber slightly wider than the cylinder diameter. The resulting flat head is not only more easily cooled than any other form, beside making a cleaner table for the valve-gear mounting, but lends itself with the rest of the cylinder to easier machining to exactly gauged thicknesses—or thinnesses—as well as to the readier fitting of a spun water-jacket, which is cheaper and sounder copper-smith work than moulding. Also, on nothing so snugly and conveniently as this flat table could the flat inlet-valve box—which is also the inlet piping—lie, to register both with its seating and the induction-hoop lead, for immediate attachment or dismounting. Still another point is that this flat, roomily-expanded combustion chamber not only gives a larger water-space and freer radiation just where these are most needed—materially assisted by the ample corrugations of the water-jacket itself—but naturally shortens the water connections to the adjacent cylinders.

*To be continued.*

### Aviators' Headgear.

A feminine reader of THE AEROPLANE writes:—"I am at present concentrating all my energies upon a design for an elastic-sided hat, on the principle of the mid-Victorian boot, you know. I shall not be selfish and keep it for my own use but recommend it for wear among 'those whom the cap fits.'"

"As the style of millinery beggars description, I beg to draw your attention to the following pictorial examples:—

"I should very much like to advertise this child of my brain in THE AEROPLANE. What would be the charge for so doing? And as for the illustrations—should I pay you or would you pay me?

"The aforementioned headgear is not only intended for the sterner sex, but, with the slight addition of a simple bow or seductive feather (according to the temperament of the wearer), it will very soon be considered 'the latest yell' among the sartorial fascinations of the lady-passenger's wardrobe. It seems to me there ought to be money in it, you know!"  
(Signed) F. E. B."



No. I



No. II.

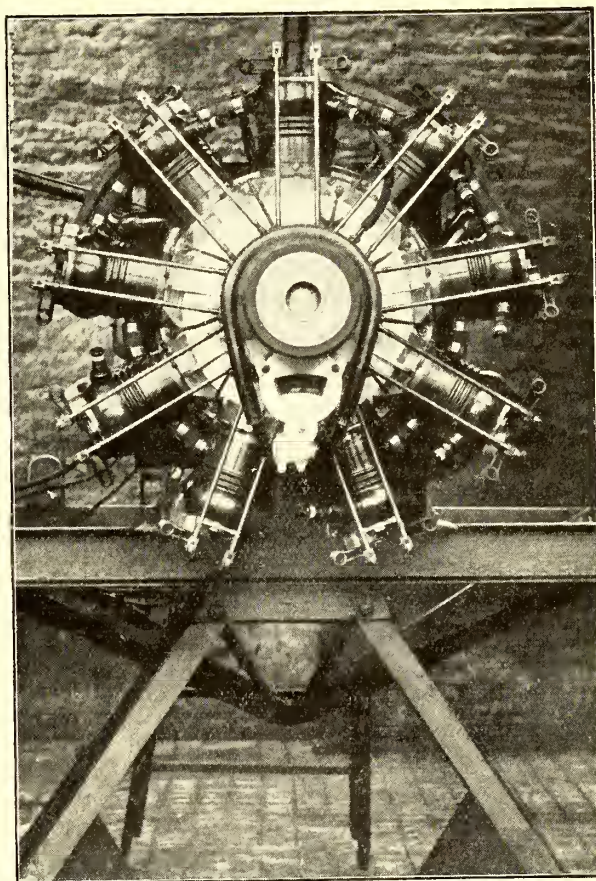
For ordinary scouting use  
at the front.

After a successful  
bomb dropping expedition.  
(Elastic noticeably stretched)



No. III.

After at least a column  
eulogium in the half penny press.  
(Manufacturers cannot guarantee  
the elastic when put to this  
unreasonable strain.)



The 130-h.p. Salmson, running at Full Speed

### An Opportunity.

The following advertisement appeared in the "Times" on April 8th:—

**OFFICER** leaving for front **MUST SELL** delightful **TALKING PARROT**, beautiful bird, rare pet; trial if desired. Price 12 guineas.—Box R.603, The Times.

Here is evidently the opportunity for the Anti-Aircraft Corps. Doubtless, if appointed for a period "on probation" to Eastchurch it could be taught to inform the A.A.C. verbally of the type of machine approaching, and thus might save our own pilots many unpleasant moments, for, if up to specification, it would rapidly acquire greater judgment in such matters than is usual among anti-aircraft gunners, or shore-going people generally. Perchance it might be embarrassing as a drawing-room pet afterwards, but one must put up with something for one's country in these days.



## THE SOLDIER'S VIEW.

The following quotation from the daily Press is strongly recommended for the perusal of workers in aircraft factories who are thinking of organising strikes, or who are slacking over their work, or who insist on their day a week off to attend the inevitable football match and cinematograph theatre. Also, it may be of interest to those who regard any expression of admiration for German thoroughness and earnestness of purpose as implying pro-German feelings:—

The plain truth is that . . . no signs of weakening are yet visible in the "moral" of the German troops, taken as a whole. Nor, if we put ourselves in their place, can we fail to see that there is as yet no reason why an intensely brave, determined, and well-organised army like that of the Germans should feel discouraged.

The Emperor can choose at will a Russian, a Belgian, or a French town in which to make a triumphant appearance in the presence of his troops. They are fighting in an enemy's country ruined and devastated by the passage of their armies. . . .

In any estimate of the present value of our enemies as fighting men we must not lose sight of the national sense of discipline which forms part of the earliest education of every German. It enables them to gain results with raw troops which among us could only be gained after months of continuous training, and to maintain an extremely high level of efficiency even after suffering great losses in the commissioned and non-commissioned ranks, for obedience has become ingrained in the people; it is in the very fibre of the nation.

It is difficult for English people to realise what a national war means to a Continental nation. Every man, woman, and child is doing his or her part. . . . All their thoughts and energies are directed to one end. All are living under a great cloud, in the shadow of which it would seem utterly incredible to them that any individual should cease working for the common good in order to gain any personal advantage or increase of leisure, and still more that anyone should give a thought to the ordinary pleasures and enjoyments of peace. Such is the spirit in which Germany is facing this struggle.

Those words were written by one who is pro-German in the same way that every officer who has fought the Germans is a pro-German. They are words of wisdom taken from the report of the official "Eye-Witness" published on March 11th, and they have probably been overlooked by most people, whereas an intelligent Press would have expanded into flaming headlines over them.

They express the admiration and respect of the best class of British officer for German system, German driving power, German organisation, and German generalship, and his contempt for the strike-making, football watching, self-seeking English workman, ignorant, lazy, selfish, and absolutely devoid of loyalty, even to his own friends who are in uniform, let alone that out-of-date sentiment called patriotism.

However, the workman who does not work may receive a rude shock when he finds that the new Government Bill to organise industry and commandeer factories will operate on employees as well as on employers.

We may find ourselves under a system of Industrial Conscription instead of Military Conscription, and it is by no means certain that the former is the lighter burden. Factory operatives who go on strike because they are only making £4 a week or so would doubtless appreciate their folly if they found themselves herded into barracks, fed on soldiers' rations, and paid 1s. a day. If such treatment is good enough for Mr. Thomas Atkins it is too good for factory-hands who refuse to do their best in time of war. It would be balm in Gilead to some people to see their hands being marched in to work under an armed guard, and really made to work for once.

Be it said that so far as the aircraft industry is concerned the proportion of good, keen workmen is unusually high, for most of the older hands took to the work because they were interested in flying machines, and were not merely out for what they could make, and no one is so disgusted with the slacker as is that class of man, for he knows how much work the slacker ought to be doing when he is not.

One thing, however, is certain, namely, that when the war is over there will be trouble in store for slackers and strikers at the hands of the soldiers who have suffered for their slackness.

### A Confirmation.

The correspondent of the "Morning Post," who has recently had special permission to visit the British General Headquarters, wrote on March 14th:—

"Very noticeable is the different regard which the various arms extend to their opponents. The airman, though he has established a superiority on which every onlooker has commented, says very little about it himself. Indeed, he even deprecates too hasty deductions from what has happened hitherto. He thinks the German is probably a fine weather flier, and expects him to do better when the winds improve.

"The gunner speaks with respect of the enemy's artillery; he speaks, indeed, enviously of what it was when he was called up to face every calibre of weapon with his 18-pounder, and though conditions have happily changed since then he maintains his respect for the foe's cunning and marksmanship.

"The infantryman also is not in the least inclined to underestimate his opponent's pluck, persistence, and adroit devices. 'He is so good a soldier one might easily get to like him if he wasn't such a villain,' said one field officer regretfully."

With this kind of feeling prevalent throughout the Services and those in close touch with the Services it may be perceived how necessary it is for all those in this country who are employed in producing war material of any kind to sacrifice themselves to the utmost to keep our troops adequately supplied. Against so brave, so well-organised, and so solid an enemy we cannot "muddle through" as we did in South Africa and elsewhere. Especially we cannot do with workmen who take their two or three days a week off because they have earned so much money during the other four days, and that is the custom among coal miners, ship-builders, and iron workers, if not in the aircraft industry.

### Another Combatant's View.

The following letter appeared in the "Times":—

Sir,—Allow me to protest against the cry of piracy and murder raised against the officers and men of the German submarine service. The men have to obey their officers and the officers the German Admiralty. British officers and men, if the geographical positions of England and Germany were reversed, would, I am sure, obey the orders of the Admiralty to sink German ships. Germany is unable to capture our merchant ships owing to her geographical situation.

We naturally find it more profitable to capture than to sink ships. Germany has always made it clear that her prosecution of war is ruthless. Why should men who are doing their duty to their country be treated otherwise than as prisoners of war?

Yours faithfully,  
COMBATANT.

Carlton Club, Pall Mall, S.W., March 11th.

As confirmation of the Service point of view, certain officers of the R.N.A.S. recently discussing this question expressed precisely similar opinions, adding that if we treat submarine crews as pirates, what kind of treatment can our aviators reasonably expect if brought down during a raid in which some of their bombs have inadvertently damaged civilian property?

### A Fellow Feeling.

Mr. John B. Jackson, of the American Embassy in Berlin, who, on behalf of the German Government, recently made an inspection of the ships and encampments in which Germans are interned in this country, mentions in his report that all the prisoners are locked below decks in the detention ships at night, which caused some nervousness among them owing to the apprehension of danger from Zeppelins.

[One might, as already suggested, provide them with quarters on the roof of the War Office and Admiralty, and Buckingham Palace, where, at any rate they would not be anxious about being drowned.—Ed.]

### A Seaplane Loop.

Probably the first instance of a pilot "looping the loop" on a seaplane occurred the other day when Mr. Harry Hawker was testing one of the small single-seater "tabloid" Sopwrens. Those who saw the performance say that, despite the floats, the first loop and the others that succeeded it were as perfect as those which the same pilot is accustomed to do on land machines.

Incidentally, it is found that even with a small seaplane the head-resistance of floats is actually less than the resistance of wheels, and the machines are correspondingly faster. It will be remembered that this had already been discovered on the big Short machines.

### North-British Fabric.

The North British Rubber Company, Ltd., have published an instructive and very convincing little booklet concerning their activities in the field of aviation. The experience of this firm in "proofing" fabrics of various sorts for various purposes extends back over half a century, so it is not unreasonable to believe that when they have something to say about proofing they are saying something about something they know something about. Pride of age goes to the rubber-proofed balloon-fabrics, of which the company produces many grades in cotton and linen, varying in tensile strength from 2,000 lbs. to 7,000 lbs. per square yard, the latter product, of two-ply linen proofed within, coloured yellow without, and additionally protected against the destructive ultra-violet rays by a layer of litharge-proofing and aluminium, being perhaps the last word in balloon material, eminently suitable for large dirigibles. The N. B. R. Co. possesses well-equipped laboratories where new materials and methods are continually undergoing tests both chemical and physical.

For aeroplane fabrics the most suitable material to date has proved to be linen doped, not with rubber, but with a celluloid varnish. Nevertheless, some of the older type rubber-doped cotton fabrics have been so successful and trustworthy that they are still marketed. The various linen fabrics are sold both doped and undoped, the modern practice being more usually to treat the fabric after it has been attached to the wing framework, one effect of the drying dope being to shrink the fabric drum-tight over the frame.

The chief problem facing a designer of aeroplane fabric is to produce a material which, if torn or cut, will not automatically extend that tear—as Euclid would put it—"ever so far both ways." This firm claims to have solved the problem in their "No. 13" fabric, in which two strong threads are interwoven at intervals of an inch both on the warp and on the weft, giving a checked appearance to the cloth. In "No. 12" the same object is attained at the cost of nearly doubling the weight (8 ozs. per square yard, against  $4\frac{1}{2}$  ozs.) by forming the material in two-ply "biassed," i.e., the warp of one layer running with the weft of the other and lightly cemented with rubber. It is claimed for this material that it is practically untearable. Another interesting fabric produced by the company is designed for sea-plane floats; this is of heavy two-ply (24 ozs. per square yard) and stands hard usage.

Beside these various fabrics, the company market many other products of interest to aeroplane manufacturers, such as masticated rubber, rubber and celluloid cements, and fabric varnishes, as well as aeroplane tyres and rubber springs of the finest quality; also waterproof aviation garments of exceptional wearing qualities, and Wellington boots.

Copies of the booklet may be had by applying to the Advertising Department, The N. B. Rubber Co., Ltd., Castle Mills, Edinburgh, and mentioning THE AEROPLANE.

### The Question of Steel Tubing.

When anyone connected with the aircraft industry is thinking about steel tubes he simultaneously thinks of the name of Accles and Pollock, Ltd. The firm was wise enough to spend money on experiments and on making special tubing at considerable expense when the aircraft industry was so young that very few people could foresee any great future development. The result has been that Accles and Pollock, Ltd., have now practically a monopoly of the aircraft tube trade. This pleasing position, however, has not caused the firm to neglect possible future developments, for it continues to produce tubing of new sections, suited to new purposes.

A sheet of these new sections has recently been received as a little addition to the firm's booklet, which already contains 213 full-size illustrations of different special sections, and it should have considerable interest for all those who have studied the question of streamlines, for apparently almost any taste in this direction can now be gratified. There are also on this sheet various other curious sections which are not streamlines, and are evidently intended for certain special jobs, and as these may work in conveniently for new designs, aircraft constructors will be well advised to obtain the latest information about them from the firm.

It must be remembered that steel tube is not the whole extent of the firm's activities, for the firm makes presswork steel parts for various machines, including those of Government design, such as rudder and elevator frames. Anything in the way of tube manipulation is distinctly the business of Accles and Pollock, Ltd.

### School and Weather Reports.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
Hendon ... ..	Calm	Fair	Windy	Windy	Windy	Windy	Calm
East Coast ... {	Dull Show'y	Rain Wind	Fine Windy	Fine to Wet	Windy	Fine	Fine

**Hendon.**—AT THE GRAHAME-WHITE SCHOOL, April 3rd (delayed in transit).—Instructors: Messrs. Manton, Russell and Winter. Pupils with instr.: Prob. Flt. Sub-Lieuts. Bone, Jacob, Kerby, Potts, Wain, Greer and Coleman (new pupil). Strts. alone: Prob. Flt. Sub-Lieut. Feeney. S's or circs. alone: Prob. Flt. Sub-Lieuts. Hards, Jackson, Mack and Feeney. Certificate taken by Prob. Flt. Sub-Lieut. Hards. Machines: Four Grahame-White biplanes.

AT THE GRAHAME-WHITE SCHOOL, week ending April 11th:—Insts.: Messrs. Manton, Russell and Winter. Pupils with instr.: Prob. Flt. Sub-Lieuts. Coleman, Kerby, Bone, Jacobs, Potts and Wain. Strts alone: Prob. Flt. Sub-Lts. Jacobs and Potts. S's or circs alone: Prob. Flt. Sub-Lts. Jackson and Mack. Certificates taken by Prob. Flt. Sub-Lts. Jackson and Mack. Machines: Grahame-White Biplanes.

AT THE HALL SCHOOL.—Lieut. J. Blyth 68 mins. on No. 1 tractor strts. and circuits. Mr. Hill 35 mins. (promising), and Mr. Cini 26 mins. rolling in good style, both on No. 3 tractor. Mr. Mitchell 14 mins. Pupils with instr.: Messrs. Cook, Aire, Hill and Mitchell (25 mins. each). Lieut. Raymond Barker on No. 3 tractor strts. Instructor for week, Mr. J. L. Hall.

AT THE RUFFY-BAUMANN SCHOOL.—Instructors: Messrs. E. Baumann and James Brothers. Pupils with instr. on 60-h.p. Caudron: Mr. Bell (10 mins.), Sykes (10), and Roobaert (10). Strts. or rolling on 45-h.p. Caudron: Mr. Bell (38 mins.), Roobaert (28), King (36), Jackson (8), Haydon (30), Coles (32) and Sykes (12). Mr. Haydon doing circuits and eights in very good style on 45-h.p. Caudron. Machines: Caudron biplanes.

AT THE LONDON AND PROVINCIAL AVIATION Co.'s SCHOOL.—Instr.: Mr. M. G. Smiles. Pupils, strts or rolling: Messrs.

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As supplied to the War Office and Admiralty.

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(Canton-Unné System)

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 Telephone .. .. 7026 Victoria.

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All those who intend to learn Flying or who are  
interested in how men fly should readPrice 3/6 net. "**The Airman**" Price 3/6 net.

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 John Lane, The Bodley Head, Vigo Street, W.  
 ABSOLUTELY INDISPENSABLE FOR PUPILS.—*The Aeroplane*

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THE DOPE OF PROVED EFFICIENCY.

CELLON, LTD., 17, OLD BROAD STREET, E.C. Telegrams: "AJAWB LONDON." Telephone: 5359 London Wall.

Crooke, Lincoln, Gould and W. D. Smiles. 8's or circles: Mr. Goodwin. Certificate taken by Mr. Goodwin, after 2 hrs. and 44 mins. on machine. Machines: Two L. and P. tractor biplanes.

AT THE BEATTY SCHOOL OF FLYING, LTD.—Instructors: Messrs. G. W. Beatty, W. Roche-Kelly and C. B. Prodger. Pupils with instr.: Messrs. Allcock (32 mins.), Bond (10), Boyle (15), Bransby-Williams (10), Bright (25), Chapelle (15), Cooper (5), Cornish (5), Crowe (10), Fanning (10), Forbes (15), Fraser (25), Leong (25), Monfez (5), Moore (20), Roche (15), Fitzherbert (6) and Watson (27). Certificate taken by Mr. Forbes. Machines: Beatty-Wright dual-control and single-seater propeller biplanes.

Mr. Roche-Kelly gave exhibition flights on Easter Monday and on April 9th and 10th, also a passenger flight. Messrs. Boyle, Bransby-Williams, junr., Moore, Watson, Yates and Fitzherbert continued extra practice

Windermere.—AT THE N.A.C. SEAPLANE SCHOOL.—Instructors: Messrs W. Rowland Ding and C. L. Pashley. Pupils with instr.: Flt. Lt. Atherton, Lt. Lindsay Bainbridge, Messrs. L. R. Abel Smith, R. Buck, C. A. Barber, F. H. M. Macintyre, D. S. C. Macaskie, J. Lankester Parker, G. L. Railton, jun., H. P. Reid, J. F. Ridgway. Doing strts.: Mr. R. Buck on Avro. 8's or circles, alone: Mr. S. J. Sibley on pusher biplane. Mr. J. Lankester Parker extra practice previous to giving instruction. Machines: N.A.C. propeller biplanes; N.A.C. Avro dual control biplanes. The following new students have joined or been for first flights: Messrs. F. W. Roberts, L. R. Abel Smith and R. Seymour Benson. Mr. Rowland Ding gave a good exhibition in a high wind on Monday, and on Good Friday took the Avro up to 2,000. A number of passengers have been carried during the week, including several Army officers

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"THE AEROPLANE," APRIL 21, 1915.

# THE AEROPLANE

*Edited by C. G. GREY. ("Aero-Amateur")*



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No. 16

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## The Production of Pilots.

Sir John French's latest dispatch tells us that it covers the period from February 2nd onwards. We may estimate this as being until April 12th, seeing that it was issued on April 14th, for one must allow it two days to get through the Press Bureau and to satisfy the Censor that the Field-Marshal Commanding-in-Chief had not said anything which in the estimation of a civilian official might be of use to the enemy or really informative to the people of this country. On that assumption it covers a period of 69 days. We are told therein that aeroplanes flew every day except eight, so flying took place on 61 days—or call it 60 days to facilitate reckoning, and allowing that the returns for April 12th itself were not included. Thus we have 130,000 miles flown on 60 days, or an average of 2,166 miles flown per day. Allowing each machine an average of 70 miles an hour, this represents a little over 30 hours' flying per day. So supposing that each machine only flew for an average of one hour per day, it represents 30 aeroplanes and pilots out per day. Which, even allowing for many days of very bad weather, is not an astonishing number.

It has already been stated officially that on March 13th one officer flew for 5 hours, and it is known that many officers fly regularly for 2 or 3 hours per day, which means that actually the average number of machines out each day must be much less.

It seems obvious, therefore, that, despite the recent increases in the establishment of the R.F.C., in the number of pilots produced at the schools, in the number of Flying Officers gazetted, in the number of air-mechanics enlisted, and in the output of the various firms manufacturing aeroplanes, there is still a great deal to be done before the R.F.C. becomes a fighting force of such size as is desired by those controlling military aviation.

It is enough to make one weep when one thinks of all the good money that has been wasted, and the good time that has been still worse wasted, by Government establishments—especially by those under civilian control—during the past two or three years, while those who could see a little way ahead were crying out for adequate support for aeroplane manufacturers and aviation schools.

At the expenditure of half the money that has been wasted we might have had before the war four times as many aeroplanes and twice as many really well-trained pilots as we possess now, for all our rush and outlay. And since war broke out, if the people responsible, in both Services, had been wise enough to consult someone possessing a distant acquaintance with the production of engineering work on a commercial basis, the output of aeroplanes might easily have been doubled, or even quadrupled up to the present date.

Most of the worst troubles of production have now been overcome and the output at the moment is far in excess of what it was even a month ago, but when one thinks of what has been and what might have been, one begins to believe more firmly than ever in that "lough-suffering star," of which Mr. Kipling wrote.

### Room for Improvement

Of course, the weather has been filthy, so the flying

has probably been done during most of those 60 days by the best pilots only, and we might perhaps find, if we could get at the truth, that very often the 30 hours were made up by 10 pilots flying 3 hours apiece, and there may have been, as there undoubtedly were on the German side, hundreds of pilots sitting on the ground, anxiously waiting for the weather to clear up, so that the next period of 60 days may see nearly ten times as much flying done.

### Public Property.

Writing of the production of aeroplanes naturally suggests the production of pilots. The number produced is free and open for everyone to behold. The Royal Aero Club publishes every week the number of certificates granted by the Committee, and it seems unlikely that anyone takes his "ticket" in these days without intending to fly for one Service or the other. Even the name of the school at which the pupil has learned is published, so one assumes that our friends the enemy have by now a fairly complete list of the Naval and Military schools as well as the civilian schools.

It will be remembered, by those who study the list, that a hundred certificates were taken in just about a month between the middle of September and the middle of October, and that it took about four months to pass the next hundred, owing to bad weather. Since then the weather has improved and the output has gone up considerably. Still, one is inclined to wonder whether it is quite wise to publish, for the benefit of the enemy, the precise rate of increase in the number of our pilots.

No one could find any good reason for complaint if the Censor objected, and it is really a trifle surprising that the authorities immediately concerned with aviation, who presumably take the trouble to read the Aero Club's official documents—they seem to read this paper carefully enough, at any rate—have not stopped the publication of weekly lists of pilots, at any rate till after the war.

### Enemy Intelligence.

It would be under-rating the acuteness and diligence of the German Intelligence Department to assume that it does not keep a close eye on our rate of production of pilots, and also note the opening of new Government schools, as indicated in the official lists, for in that way it is possible to form a fairly close estimate of the number of our military aviators available to oppose the great aerial attack which the Germans seem to be preparing—judging from the continual reports of the absence from the air of enemy aeroplanes in the war area.

Only a certain number of those who pass for the R.Ae.C. certificate are capable of being turned into Service fliers. Some have heads and no hands, some have hands and no heads, and some have neither, when put onto a moderately fast aeroplane after staggering through their tests on a school machine. And probably the Germans can form a very fair estimate of the proportion of "rejects," of indifferent but passable pilots, and of really good aviators. The latter proportion is by no means high in any country.

### The Choice of Instructors.

On a previous occasion reference has been made to



the fallacy of supposing that because a man is a good flier himself he is therefore a good instructor. In practice one frequently finds that a very good pilot is apt to get peevish with a seemingly stupid pupil, and to push him out of a school because he is a trifle slow in learning, or because he makes an apparently silly mistake.

It is more than likely that in this way the Services have lost many valuable pilots. It is particularly probable at a Service school where the pupil is being taught at the Government's expense.

At a civilian school, where, to begin with, the instructor is chosen for his ability to instruct, and not because it is his turn to rest his shattered nerves after a spell at the front, or because he thinks he would like a rest and has a friend at the Admiralty or War Office who can arrange it for him, it is all to the school's advantage to teach a pupil to fly decently. If he proves utterly unteachable he has to have a goodly portion of his money back—and to a school manager that is like having his teeth drawn. Also, it would soon ruin a school's reputation if it kept on turning pupils away as unteachable, for the rejected pupils would soon circulate their own version of the story, alleging that the school did not know how to teach. Further, in order to save the school machines from being smashed, the instructors at a civilian school watch every movement of their pupils with the greatest care, and so the pupil is, as a general rule, most carefully taught from the very beginning.

#### **Young Men in a Hurry.**

At a Service school, on the other hand, the main object is to rush as many pilots through as possible, and, if a pupil—except, of course, those with Service, social, or political influence—seems stupid or clumsy, out he goes, for are there not hundreds as good on the Waiting List? Naturally this system is all in the interests of those on the aforesaid Waiting List, for if every pupil received the fullest attention and consideration it would take years to work through the list as it now stands in theory. But it is well to remember that the Waiting List is full of the names of men who are obviously socially or personally undesirable as commissioned officers, though the officers who have to do the selecting are too courteous to tell them so. Much time might be saved, and much heart-burning spared, if these officers would make up their minds to be rude officially at times.

Further, at a Service school the instructor has not the same immediate inducement to protect machines from being smashed. Of course, a pupil is fired out if he smashes a Government machine, but the instructor escapes being fired for not preventing the pupil from smashing it—which would frequently be the fairer way of fixing things.

One experienced aviator remarked recently that he never knew the real joy of flying till he piloted a Government machine. He said that the beautiful feeling that if one had a smash there was no big repair bill at the back of it, and that one could always get down safely anywhere if one resolved to smash the machine to save oneself, and could make that resolution without worrying about the cost, made Service flying the finest and cheapest sport in the world. Which is true, but it is likely to lead to carelessness.

#### **The Better Training.**

Judging from what I have seen personally, the average pilot who has taken his certificate at a civilian school is in most cases a vastly better flier than one who has done so at a Service school—that is, up to the point of taking his certificate. What happens afterwards is another matter altogether. But, assuming that the civilian-trained pilot is the better, up to the certificate stage, it looks as if his further training would cost the State less.

On this point the Navy seems to agree with me, for the Air Department has given full support to the civilian schools, actually sending pupils to them to be

trained at the State's expense at the standard school rate, and habitually taking into the Air Service any pupil from a civilian school where, while learning at his own expense, he has shown any promise of being a decent flier. Many a good man has got into the R.N.A.S. through having the pluck to back his opinion by spending £75 on tuition fees.

The Army, on the other hand, chose at the very beginning of the war to train its own pilots. It started by taking over the aerodrome at Brooklands, and paying absurd prices for some of the most terrible alleged aeroplanes that ever staggered off the ground, even including a wild weird "pusher" biplane, which looked as if it had been designed in collaboration by Mr. Heath-Robinson and Mr. Harry Tate—it had Caudron tail-booms, heavily staggered planes, and a nacelle so netted round with wires that one had to get in with a shoe-horn, to escape being hanged or amputated on the bracing.

At a moderate estimate every pilot turned out there during the first couple of months of the war must have cost the War Office about £1,000, thanks to smashed machines, wasted material, the wages of innumerable mechanics idling about, the pay of the pupils themselves—who were officers on probation—and the general mismanagement of the whole show. The pilots knew next to nothing when they took their certificates, for they were hopelessly badly taught on machines which were only fit for use by the most capable instructors when looked after by the best mechanics, and when left to the mercies of the amateur wood-butchers and iron-manglers who were sent there in the uniform of R.F.C. air-mechanics the poor old box-kites simply fell to bits.

Happily no one was killed—purely by good luck—and since then a series of highly efficient officers have commanded at Brooklands, and have put the place into something like a state of effectiveness, if not efficiency. Also, the school work is now chiefly done on Manrice Farman's, than which nothing is better as a school machine. There are other military schools which have been as bad as Brooklands was, but the Commanding Officers are always changing, and the quality of schools varies according to the quality of the person in charge.

Still, up to the point of getting his certificate, no pilot need have cost the Government more than £75, for all the training to that point might have been done at civilian schools at a flat rate of payment. Also, in very many cases, the War Office need not have paid anything for experiments on unsuitable material, for most men would have paid for their own tuition—and their own keep while under tuition—and would merely have received the £75 on joining up.

#### **A Pretty Theory.**

It seems that one reason for the all-military school was the theory that from among a host of applicants it would be possible to select a sufficient number of young men of the type desirable among officers holding the King's commission, and that it would be possible to train them as soldiers while training them as pilots, thus removing them from pernicious contact with civilian professional aviators and low persons of similar sort who use such expressions as "stunt," "windstick," "joy-ride," and so forth. Not a bad idea if it could be thoroughly carried out, though the Navy system of sending the pupils to learn flying at a civilian school and having them taught Service routine and the scientific side of their profession by properly qualified instructors during such time as they are not flying seems even better.

Even after the certificate stage excellent pilots are lost by those in authority being in too much of a hurry. I have in mind one particular instance of a young man who learned to fly at a civilian school and took his certificate very well on a real flying machine, giving every promise of becoming a good, sound pilot. He was accepted on probation for the R.F.C. and was sent to a certain aerodrome where he was put onto an anti-

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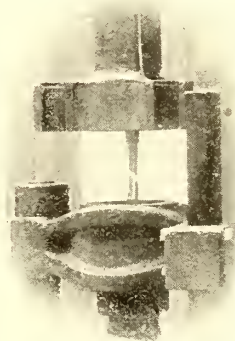
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quoted box-kite and told to fly it. After the machine on which he had learned, the thing steered like a dray, and instead of answering its controls and landing properly from the height at which he was accustomed, it came down in a heap. So he was promptly told that he was no use, and was fired out. When one remembers the terrible early performances of some of the officers who are now among the finest fliers in the R.F.C., one sees that it is quite possible to lose a most useful pilot by jumping to conclusions in this way. In fact, since war broke out, some quite experienced fliers have made fearsome exhibitions of themselves when trying to fly on machines of types which they had not flown before, and if judged in the same way as the younger pilots they would have left the corps hurriedly.

#### **A Peace-Time Precedent.**

In time of peace there is, if anything, more excuse for being severe on single mistakes than in time of war, for there is more time to replace the young officer who has left. I recall one quite pathetic incident which occurred something over a year ago. A youngster who was very keen on flying took his certificate and seemed like being a very fine pilot. He was appointed on probation and shaped very well for some weeks. Then, one fated morning he went out early to practise certain manœuvres which were necessary for him to learn some day, if not just then. It so happened that the same morning the officer commanding his station also chose to get up early, feeling perhaps a trifle liverish. The youngster started a terrific spiral high up, and, unwittingly, right over the O.C.'s head. At about 2,000

feet he overdid the spiral and started an awe-inspiring side-slip, which brought him down to somewhere inside 1,000 feet. Then, having experimented in various ways with his controls, he found the way out, recovered perfectly, flew a few circuits, and made a faultless landing.

But the side-slip had quite upset the O.C., who sent for the experimenter and informed him that he would leave by the first train next morning. The poor boy bore up bravely all day, and busied himself packing his traps and squaring things up, but at night, alone in his quarters and thinking over his wrecked career, he broke down, and a man whose room was next to his told me afterwards that he was kept awake half the night by the lad sobbing as if his heart would break. My friend wanted to go and comfort him, but partly because he could not quite overcome the natural shyness of the young British officer, and partly because he was afraid his sympathy might not be welcomed, he did not. So the boy went off next morning early, convinced that God and mankind alike hated him.

There are as good fish in the sea as ever were caught, but contrariwise in all walks of life we are apt to throw away diamonds and treasure lumps of clay, and—well, some of the new pilots do fly as if they had feet of clay, and hands of putty, not to mention heads full of sawdust. Nevertheless, there are some startlingly good pilots among the new drafts, as the Germans are likely to find out to their cost—but we cannot afford to lose others like them through being in too much of a hurry.—C. G. G.

#### **To Candidates for the Flying Services.**

Inquiries are still constantly received at this office from young men wishing to join the R.N.A.S. or the R.F.C. One of the commonest questions is as to how long an applicant may expect to wait before starting work at a naval or military flying school if he has been accepted as suitable to hold a commission and has been placed on the "waiting list," and before being gazetted on probation. The answer to this question is simply, "It all depends."

It depends on: (a) The length of the waiting list; (b) the time it takes to clear off all pupils already under instruction, which largely depends on the weather; (c) the casualties on active service making it necessary to fill up the gaps immediately; (d) the supply of aeroplanes available; (e) the delivery of new aeroplanes from manufacturers; (f) the delays caused by strikes and commercial upheavals; (g) the number of people placed on the "waiting list" who may happen to have superior influence in high quarters, or possibly superior qualifications; (h) the state of preparedness of new aerodromes, and on enough other conditions to fill in the balance of the alphabet.

On the question of superior qualifications there is no doubt that the pupil who has learned to fly at a civilian school, and has shown himself to be a promising pilot, has a better chance of being pushed forward on the "waiting list" than one who has simply waited to be called up and taught at Government expense. This applies more particularly to the Navy than to the Army, as the War Office prefers, as a rule, to train its own pilots from the beginning.

In reply to another question which is frequently asked, the £75 "bounty" is only paid to pilots who have learned to fly at their own expense, or, at any rate, not at the Government's expense. Pilots who are trained from the beginning at either Naval or Military schools do not receive this £75.

Another frequent question is answered by the statement that practically all commissions issued now are temporary commissions, because nobody can tell exactly what size the two Flying Services will be after the war. A temporary commission also is advantageous because, though a man may be a sufficiently good flier to be useful as a scout in time of war, he may be personally or socially unsuited to hold a commission in time of peace, and therefore the granting of temporary commissions gives the authorities the advantage of being able to select only the very best men for continuous service when

the war is over, and of being able to get rid of less desirable officers without being uncivil to them.

It is certain, however, that the really valuable men will all be retained, consequently anyone with confidence in himself need have no hesitation about taking a temporary commission if he gets the chance.

It may be well to state again that applications for a commission in the R.N.A.S. should be addressed to The Director of the Air Department, The Admiralty, S.W., and applications for commissions in the R.F.C. to The Director of Military Aeronautics, The War Office, Whitehall.

It should also be impressed on all officers, non-commissioned officers, and men of other branches of the Services that applications for appointments to or commissions in the Flying Services must be forwarded through their own commanding officer, and not direct.

#### **A Flying Services Matinee.**

The British Women's Patriotic League has organised a matinee in aid of the Flying Services' Fund, to be given at the Playhouse, Northumberland Avenue, on Friday, April 23rd. Princess Henry of Battenberg has promised to attend, and the following artists will appear:—Mr. Charles Hawtreys and Miss Doris Lytton, Mr. Harry Tate, Miss Winifred Emery, Mlle. Polaire, Miss Margery Maude, Miss Polly Emery, and Miss Lynn Fontaine, Mme. Ada Crossley, and others.

Tickets, at the usual theatre prices, may be obtained by letter addressed to Mr. Alfred Turner, at the Playhouse.

#### **The Aeronautical Society.**

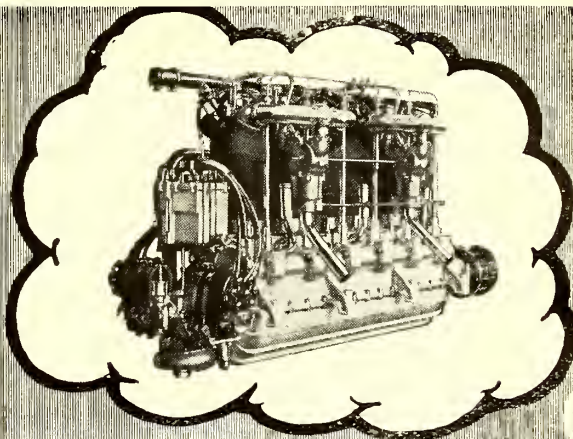
Notice is given that the Annual General Meeting of the Aeronautical Society of Great Britain will be held on Thursday, May 20th, 1915, at 7.45 p.m., at the Royal Society of Arts, John Street, Adelphi, W.C.

AGENDA: To receive and approve the Report of the Council on the state of the Society, and the Balance Sheet.

To discuss and determine such questions as may be proposed by the voters relating to the affairs of the Society, and to fill the vacancies on the Council for the ensuing year. Any voter desirous of proposing any subject for discussion at the Annual General Meeting shall give notice in writing to the Secretary, which shall be received by him by noon on May 6th, 1915.

The retiring Members of Council are:—A. E. Berriman, Griffith Brewer, Squadron Comm. Alec Ogilvie, R.N., Mervyn O'Gorman, C.B., F. Handley Page, Colonel H. E. Rawson, C.B., Dr. A. Thurston, Squadron-Comm. G. Aldwell, R.N.

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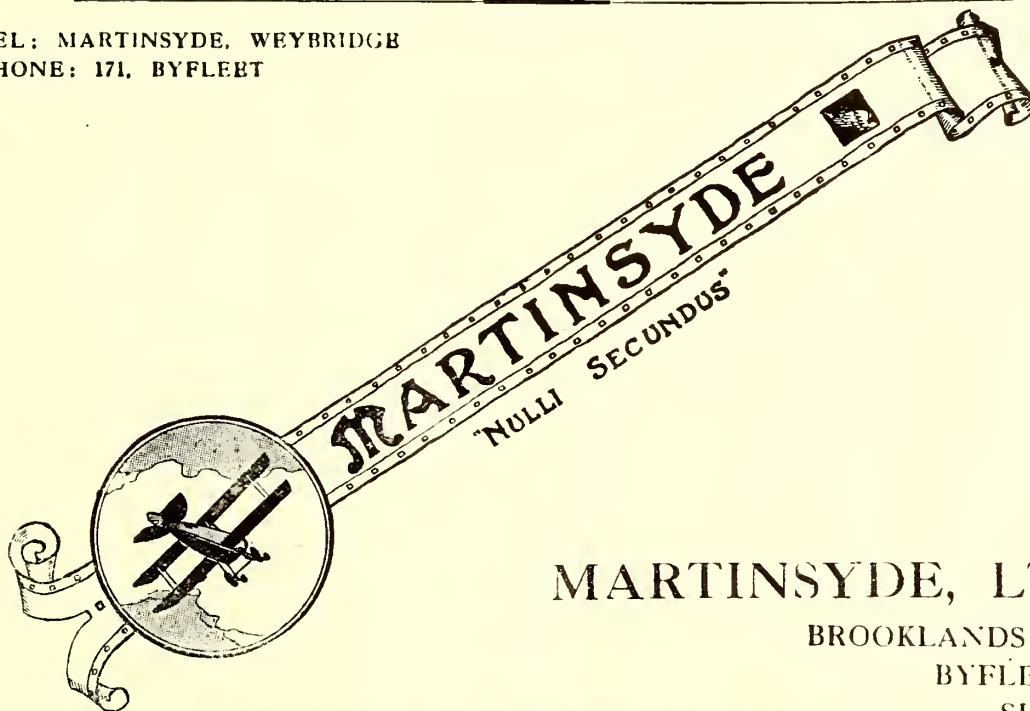
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## Naval and Military Aeronautics.

### GREAT BRITAIN.

From the "London Gazette," April 13th.

WAR OFFICE, APRIL 13TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying officers to be flight coms.: Capt. G. T. Porter, R.A. March 27th. Lieut. R. M. Vaughan, Royal Inniskillen Fusiliers, and temp. capt. March 28th.

SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. lieuts. (on prob.) confirmed in rank: F. S. Barnwell, E. E. Hodgson. To be sec. lieuts. (on prob.). April 1st: F. W. Wright, J. E. Marriott. Date of seniority of Sec. Lieut. J. P. Inglefield is May 16th, not as stated in "Gazette" of November 28th.

\* \* \*

From the "London Gazette," April 14th.

WAR OFFICE, APRIL 14TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—The appointment of Lieut. (temp. Capt.) J. Valentine, Special Reserve, as an equipment officer antedated to January 16th.

SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. lieuts. (on prob.) are confirmed in rank: F. L. Scholte, L. F. R. Fell.

\* \* \*

From the "London Gazette," April 15th.

WAR OFFICE, APRIL 15TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Assist. Equipment Officer—Temp. Sec. Lieut. Hon. A. J. W. Keppel. April 2nd.

\* \* \*

From the "London Gazette," April 16th, 1915.

WAR OFFICE, APRIL 16TH.

REGULAR FORCES.—STAFF.—ADJT.-GEN.'S AND QMR.-GEN.'S STAFF.—Dep. Assist. Adj. and Qmr.-Gen.—Capt. F. L. Festing, Northumberland Fusiliers, and seconded, vice Bt. Maj. B. H. Barrington-Kennett, Grenadier Guards. March 28th.

ROYAL FLYING CORPS.—MILITARY WING.—Wing Commander—Bt. Maj. J. M. Salmond, D.S.O., Royal Lancashire Regiment, from Squadron Commander, and to be temp. Lieut. Col. April 13th.

Flight Commander—Capt. C. A. G. H. L. Farie, Highland Light Infantry, from flying officer. April 13th.

\* \* \*

From the "London Gazette," April 17th, 1915.

WAR OFFICE, APRIL 17TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers.—March 12th: Sec. Lieut. G. H. B. McCall, S.R.; Sec. Lieut. G. G. A. Williams, S.R., 5th D. Guards; Lieut. M. D. Methven, 10th Co. of Lond. (Hackney) T.F. March 31st: Capt. F. W. Smith, 2nd S. Midland Brig., R.F.A., T.F.; Temp. Sec. Lieut. C. E. I. C. Anne, 6th Yorks. L.I., and transferred to General List, New Armies.

Equipment Officer.—Lieut. J. T. C. Moore-Brabazon, S.R., from an asst. equipment officer, and to be temp. capt. March 31st.

Asst. Equipment Officers.—Sec. Lieut. L. F. R. Fell, S.R. March 19th. March 24th: Sec. Lieut. F. L. Scholte, S.R.; Sec. Lieut. A. E. Snape, S.R.; Sec. Lieut. H. Burchall, S.R.

SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieut. (on prob.) H. Burchall confirmed in rank. To be sec. lieuts. (on prob.): C. H. Pixton. April 1st. G. S. Bower. April 12th.

\* \* \*

From the "London Gazette," April 19th, 1915.

WAR OFFICE, APRIL 19TH.

REGULAR FORCES.—ESTABLISHMENTS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieut. (on probation) A. E. Snape is confirmed in rank. G. S. Peacock to be Sec. Lieut. (on probation). April 19th.

### NAVAL.

The following appointments were notified at the Admiralty on April 13th:—

ROYAL NAVAL AIR SERVICE.—Temp. Sub-Lieuts.—O. G. G.

Villiers promoted to be temporary lieutenant, R.N.V.R., and appointed to the "President," additional, for R.N. Air Service, to date February 28th; B. C. Windeler, to the "President," additional, for R.N. Air Service, to date April 8th.

\* \* \*

The following appointment was notified at the Admiralty on April 14th:—

ROYAL NAVAL AIR SERVICE.—Mr. C. W. Graham entered as probationary flight sub-lieutenant for temporary service, and appointed to the "President," additional, for R.N. Air Service, to date April 12th.

\* \* \*

The following appointments were notified at the Admiralty on April 15th:—

ROYAL NAVAL AIR SERVICE.—The following have been granted temporary commissions as lieuts., R.N.V.R., and appointed to the "President," additional, for duty with R.N.A.S., to date as mentioned: G. E. Knights, April 1st; J. S. Hills, W. F. Prentice, and W. J. Maybery, April 13th.

Mr. M. R. Buckland granted a temporary commission as sub-lieut., R.N.V.R., and appointed to the "President," additional, for duty with R.N.A.S., to date April 1st.

\* \* \*

The following appointments were notified at the Admiralty on April 16th:—

ROYAL NAVAL AIR SERVICE.—Temporary Lieut.-Com., R.N.V.R., the Duke of Westminster, promoted to the rank of temporary commander, R.N.V.R., to date April 11th.

Temporary Lieuts., R.N.V.R.—A. Fairer Smith, Lord Tolle-mache, and R. W. McGrath, promoted to the rank of temporary lieutenant-commanders, R.N.V.R., to date April 12th.

Temporary Sub-Lieuts., R.N.V.R.—K. Secretan, E. J. B. How, and Snowden Hedley, promoted to the rank of temporary lieutenants, to date April 12th.

[All the above are officers of the Armoured Car Squadrons.—Ed.]

\* \* \*

The following appointments were notified at the Admiralty on April 17th:—

ROYAL NAVAL AIR SERVICE.—Temp. Sub-Lieut. G. A. Cox entered as probationary flight sub-lieut. and appointed to the "President," additional, for R.N. Air Service, temporary commission as sub-lieut., R.N.V.R., cancelled, to date April 12th.

Temp. Sub-Lieut. C. D. Morrison, R.N.V.R., transferred to R.N. Air Service as probationary flight sub-lieut., and appointed to the "President," additional, for R.N. Air Service, to date April 16th.

Mr. S. St. G. C. Belfield entered as probationary flight sub-lieut., for temporary service, and appointed to "President," additional, for R.N. Air Service, to date April 16th.

The following have been entered as probationary flight sub-lieuts. and appointed to the "President," additional, for R.N. Air Service, to date April 16th: M. A. Osborn, C. L. Scott, E. J. P. Burling, A. R. Cox, C. T. MacLaren, B. P. H. de Roeper, H. C. Vereker, and Chief Petty Officer H. O'Hagan, R.N.V.R.

Chief Petty Officers—H. T. Tullock and A. R. Mackenzie granted temporary commissions as sub-lieuts., R.N.V.R., and appointed to the "President," additional, for Anti-Aircraft Corps, to date April 15th.

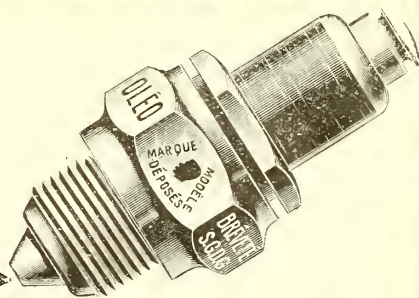
\* \* \*

The following appointment was notified at the Admiralty on April 19th:—

ROYAL NAVAL AIR SERVICE.—Petty Officer J. S. Wheelwright, promoted to the rank of probationary flight sub-lieut., and appointed to the "President," additional, for Royal Naval Air Service, to date April 15th.

\* \* \*

Mr. Winston Churchill, M.P., visited the London Aerodrome, Hendon, on Saturday, April 17th, to view the Admiralty aeroplanes, which were drawn up for inspection. The First Lord arrived at about 4.30 and left about 6.30 p.m.



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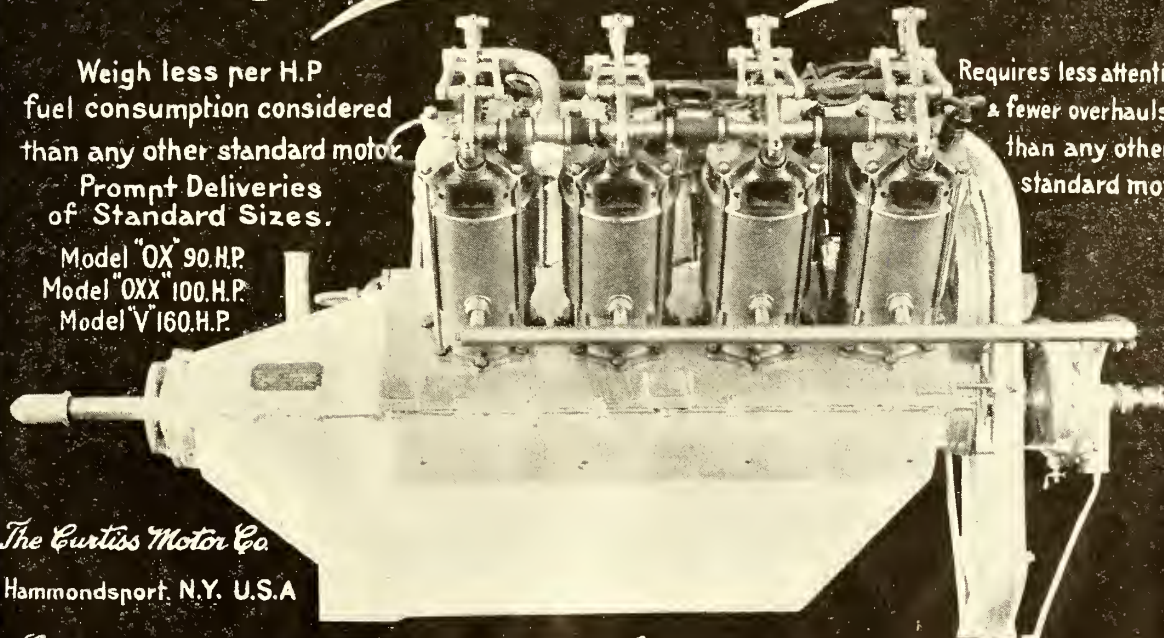
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Flight Lieut. G. C. Colmore, Royal Naval Air Service, was admitted to the Princess Alice Memorial Hospital, Eastbourne, on the morning of April 16th suffering from a bullet wound in the left leg. The injury was the result of an accident which will form the subject of an inquiry. The roads between Polegate and Hailsham were guarded during the night by sentries, and Lieut. Colmore was motoring along the highway when he was challenged at two points, and stopped on each occasion. Subsequently he met a third patrol, and owing possibly to some misunderstanding he was fired at. The bullet pierced the bonnet of his car, passed under the petrol tank, and entered the calf of Lieut. Colmore's leg. The officer was taken to the surgery of Dr. Walker, of High Street, Hailsham, and subsequently he was removed to Eastbourne.

\* \* \*

An engagement is announced between Squadron Commander James L. Travers, R.N.A.S., eldest son of Mr. and Mrs. J. L. Travers, of Horton, Warmingham, Surrey, and Hilda Nancy, second daughter of Captain F. A. Edwards, R.F.A., and Mrs. F. A. Edwards, of The Grange, Bembridge, Isle of Wight.

Squadron Commander Travers, Commanding Calshot Naval Air Station, was the first officer to join the R.N.A.S. by direct entry, and his promotion to his present rank has been won by sheer merit with remarkable rapidity. Before joining the R.N.A.S. he was a clever and experienced pilot and displayed ingenuity and ability as an engineer. He has made a study of the design and running of aero-engines, and on this subject his knowledge is of the highest value.

#### MILITARY.

A further dispatch from Sir John French, covering the operations of the British Expeditionary Force under his command in the Western theatre of the war since February 2nd, was published on April 14th. It includes the descriptions of the British victory at Neuve Chapelle and of the action at St. Eloi, the former of which, it appears, would have been even more complete than it was but for an unfortunate delay in bringing up reserves at a critical period of the battle.

The following section deals with aircraft:—

(6) The work of the Royal Flying Corps throughout this period, and especially during the operations of the 10th, 11th, and 12th March, was of the greatest value. Though the weather on March 10th and on the subsequent days was very unfavourable for aerial work, on account of low-lying clouds and mist, a remarkable number of hours' flying of a most valuable character were effected, and continuous and close reconnaissance was maintained over the enemy's front.

In addition to the work of reconnaissance and observation of artillery fire, the Royal Flying Corps was charged with the special duty of hampering the enemy's movements by destroying various points on his communications. The railways at Menin, Courtrai, Don, and Douai were attacked, and it is known that very extensive damage was effected at certain of these places. Part of a troop train was hit by a bomb, a wireless installation near Lille is believed to have been effectively destroyed, and a house in which the enemy had installed one of his Headquarters was set on fire. These afford other instances of successful operations of this character.

Most of the objectives mentioned were attacked at a height of only 100 to 150 feet. In one case the pilot descended to about 50 feet above the point he was attacking.

Certain new and important forms of activity, which it is undesirable to specify, have been initiated and pushed forward with much vigour and success.

There have been only eight days during the period under review on which reconnaissances have not been made. A total of approximately 130,000 miles have been flown—almost entirely over the enemy's lines. No great activity has been shown over our troops on the part of the enemy's aircraft, but they have been attacked whenever and wherever met with, and usually forced down or made to seek refuge in their own lines.

\* \* \*

The following, received from the War Office for publication, was issued by the Press Bureau on April 19th:—

Yesterday two more German aeroplanes were brought down; in this area since the 15th inst. the total loss to the enemy is five aeroplanes.

\* \* \*

The following appeared in the Casualty List issued on April 13th:—

OFFICIALLY REPORTED MISSING AND UNOFFICIALLY REPORTED PRISONER OF WAR.

Mansell-Moullin, Sec. Lieut. O., Royal Flying Corps.

\* \* \*

A marriage has been arranged, and will shortly take place, between Captain A. K. O'Brien, Queen's Bays (S.R.) (attached Royal Flying Corps), of Lumbwa, British East Africa, and Monica, elder daughter of Mr. and Mrs. Hugh H. Underhill, of 50, Nevcrn Square.

\* \* \*

Mr. C. H. Pixton, whose appointment as 2nd Lieut., R.F.C., on probation, is gazetted, is, of course, the well-known Sopwith pilot, who won the Schneider Cup, and who, just before the war, joined the Aeronautical Inspection Department.

\* \* \*

A reader of THE AEROPLANE on active service writes:—

"We have, of course, seen plenty of aeroplanes of all sorts, but though I have seen hundreds of shells fired at enemy machines, I have not yet seen one hit. It seems a pity that some device cannot be found to render it possible to ascertain range and direction more accurately, as it seems an unnecessary waste of ammunition, and the shooting does not seem to worry the aviators at all.

"Since I came out here in January I have never seen a German monoplane; practically all their machines used round here are Aviatiks. Our men have been more busy of late and the hostile planes have not paid us such frequent visits.

"I might say that the paper is passed round to several chaps each week and is greatly appreciated."

#### AT SEA.

The "Telegraaf" (Amsterdam, April 14th) reports that the Cork Steamship Company's steamer "Imber" was attacked by a German aeroplane near the "Noord Hinder" Lightship on April 13th. The machine was flying at a height of about 800 feet and dropped five bombs which did no damage.

\* \* \*

The "Noord Hinder" Lightship reports that on April 18th German aviators dropped bombs and afterwards shot at two British steam trawlers without result.

#### FRANCE.

The official communiqué of April 13th says:—

Our aviators successfully bombarded the military sheds at Vigneulles, Woivre, and dispersed not far from there a battalion on the march.

\* \* \*

The official communiqué of April 14th says:—

A Zeppelin threw bombs on Bailleul. The aim of the bombs was the flying ground, which was, however, not struck. Three civilians were killed.

Two German aeroplanes were forced to descend in our lines, one near Braine and the other near Lunéville. The aviators were made prisoners. A third enemy aircraft which was hit by the fire of our advance posts fell near Ornes, to the north of Verdun, some 600 metres from our lines. One of the aviators was struck by a bullet.

\* \* \*

The official communiqué of April 15th says:—

A German Aviatik threw bombs on the hospital of Mourmelon.

By way of reprisal for the bombardment of Nancy by a Zeppelin one of our aeroplanes threw five bombs on the German Headquarters. The projectiles all fell on the buildings in which the Imperial Staff is installed at Mezières-Charleville.

We also bombarded the station of Freiburg, in Breisgau. Finally a flying squadron of fifteen machines dropped bombs with complete success on the German military buildings of Ostend. Our aeroplanes were violently cannonaded, but all returned unscathed.

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The afternoon communiqué of April 16th says:—

Yesterday afternoon our artillery brought down an aeroplane, which fell opposite the British lines behind the German trenches to the north of Ypres.

The evening communiqué of April 16th says:—

Our aviators were very active. Ten bombs were dropped on the railway workshops at the station of Leopoldshöhe, east of Huningue. These workshops are at present being used for the manufacture of shells.

Ten bombs were dropped on the powder-magazine at Rothweil. Six struck the mark. A huge red flame shot up, surrounded by dense smoke. The aeroplanes were struck by shell splinters, but returned safe and sound.

Forty bombs, most of which hit the mark, were dropped on the central electric station of Maisières-les-Metz, fifteen kilomètres north of Metz. This station supplies the town and forts of Metz with power and light. Thick smoke rose from the central building.

On their return our aviators encountered three Aviatiks, to which they gave chase, forcing them to land. The squadron suffered no mishap, though subjected to a violent cannonade from the Metz forts.

\* \* \*

The communiqué of April 17th says:—

A British aeroplane brought down a German aeroplane in Belgium near Boesinghe. The machine fell within our lines. The pilot was killed and the observer was taken prisoner.

One of our dirigibles bombarded the station and the aviation sheds of Freiburg, in Breisgau.

\* \* \*

The afternoon communiqué of April 18th says:—

A Belgian aeroplane brought down a German aeroplane near Roulers. In the same region one of our air squadrons successfully bombarded an aerodrome.

The evening communiqué of April 18th says:—

One of our aeroplanes, after a brilliant pursuit, brought down a German aeroplane, which fell in the enemy lines in Belgium, between Langemarck and Paschendale.

\* \* \*

The afternoon communiqué of April 19th says:—

The German aircraft which flew over Belfort dropped four bombs, which damaged two sheds and set fire to some cases of powder. Nobody was hurt, and only slight damage was done.

The evening communiqué of April 19th says:—

The aviator Garros was forced to come down at Ingelmunster—ten kilomètres north of Courtrai—and was made prisoner yesterday evening.

\* \* \*

The "Morning Post" correspondent in Northern France reported on April 14th:—

"Never since the war began has there been such an intensity of bomb-throwing exploits as within recent days. Further, they would seem to be experimenting with new and heavier bombs for aeroplanes. On Monday a Taube attacked a railhead of ours, where a hospital train was loading up. There were consequently a considerable number of troops about, as well as helpers. It threw only one bomb, so far as I can gather, but that one created a very severe explosion. Such a bomb from an aeroplane has not been seen here heretofore.

[Probably not by those troops, but it seems that the Germans know something of our own bombs by now.—Ed.]

"About the same time, too, the Suffolks were attacked by an aeroplane as they were marching on a road. It threw five bombs.

"The Zeppelin that flew over Bailleul during the night of Monday-Tuesday proves that, contrary to rumour, these aerial freaks are still being kept towards this front. Its visit is a little curious, and illustrates the activity of the spy. Certain high officers had been expected to stop in Bailleul that night, but at the last minute did not do so; but it has been ascertained that the Germans had information of the intended visit. [Much as we had of the Kaiser's visit to Thiert.—Ed.]

"Yet another bomb-throwing aeroplane attempted to attack Furnes, but was brought down by a Belgian armoured motor-car and the aviator killed."

A message from Paris on April 15th states that the aviators of both armies continue to show great activity in Alsace. A Taube appeared over Gérardmer, in the Vosges, but was driven off by gunfire before it could drop bombs. Another got as far as Lunéville, but was pursued by a French aeroplane and brought down with machine-gun fire.

\* \* \*

It is reported that Lieut.-Aviateur Garros, after a stern chase, succeeded in bringing down a Taube east of Messines, between Ypres and Armentières, on the 15th.

\* \* \*

It is reported that on April 16th M. Garros brought down an Aviatik near Dunkirk when flying alone. It is said that when M. Garros landed he went up to the wreck of the machine and saluted the dead aviators.

\* \* \*

It is reported that a German Taube aeroplane flew over Amiens on the 16th and dropped bombs near the Cathedral, which, however, was not struck. There were eleven human casualties.

\* \* \*

It was reported from Paris on April 18th that at 7 a.m. a Taube flew over Belfort and dropped two bombs. Only insignificant damage was done. In spite of repeated attacks by German aeroplanes the inhabitants remain perfectly calm.

\* \* \*

The "Temps," Paris, April 19th, says that the Zeppelin which visited Bailleul on the night of April 12th dropped 19 bombs. Two workmen's houses were completely destroyed, and an old woman of 80 and a female refugee, aged 21, were killed. A bomb which fell on another house hurled across the street on to the roof of a neighbouring building a cradle containing a child a few months old, which was instantly killed. Four horses were also killed or wounded.

#### GERMANY.

The official communiqué of April 13th says:—

The French declare that they dropped 50 bombs on the "maritime station and the foundry at Bruges." As a matter of fact they dropped 9 bombs in the neighbourhood of Ostend and 2 near Bruges without doing any damage. By way of reprisals we bombarded last night Poperinghe, Hazebrouck, and Cassel, which are occupied by the British.

A hostile air attack east of Reims failed.

\* \* \*

The Headquarters communiqué of April 16th says:—

In yesterday's clear weather the aviators were very active. Enemy aviators bombarded places behind our positions. Freiburg was again visited, and several civilians, the majority being children, were killed and wounded.

\* \* \*

The Berlin communiqué of April 16th says:—

During the night of April 15-16 naval airships successfully bombarded several defended towns in the southern part of the British East Coast. Before and during the attacks the airships were heavily fired at, but returned undamaged.

\* \* \*

The communiqué of April 17th says:—

A French airship last night visited Strasburg, dropping several bombs; the material damage done, mainly consisting of the breaking of window-glass, was unimportant. Unfortunately some civilians were wounded.

One of our aviators, who the day before yesterday bombarded Calais, yesterday dropped bombs on Greenwich, near London.

[Apparently the aviator misinformed the Staff as to his doings, or was genuinely mistaken as to his whereabouts.—Ed.]

\* \* \*

The official communiqué of April 19th says:—

Aviator Lieut. Garros was forced to land near Ingelmunster, in West Flanders, and was taken prisoner.

\* \* \*

The following news circulated by the German wireless stations has been received by the Marconi Company:—

April 17th.

BERLIN.—During the night of April 15th bombs were dropped

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with success by a German naval airship on several defended towns on the south-east coast of England. The airship was met by heavy firing both before and during the attack. It returned safely.

It is reported from London that early on the morning of April 16th two German airships appeared over Maldon (Essex) and dropped four bombs without doing any material damage. They also threw bombs on Weybridge. Three kilometres farther on some houses were set on fire. The airships continued their flight over the course of the River Blackwater. In the early morning an airship coming from the sea flew over Lowestoft and dropped three or four bombs; three explosions were heard and a woodyard was set alight. One woman was slightly injured. Six bombs were dropped on Southwold. The airship then made for the sea.

A German aircraft dropped bombs on Sittingbourne and Faversham (Kent), which, however, did no damage. In its flight it passed over Sheerness, where it was fired on.

One of our airmen who dropped bombs on Calais the day before yesterday flew over Greenwich, near London, and dropped some bombs.

[It should be noted that this is German "wireless," and not a German official communiqué, and it is therefore unreliable. "Weybridge" is probably a mistake for Heybridge, in Essex.—Ed.]

\* \* \*

According to a German report, a French aviator flew over the Black Forest on April 14th, dropping four bombs on Stockach.

\* \* \*

It was reported from Bâle on April 16th that a combined attack by five French and one British aeroplane was made that day on a number of German towns on the right bank of the Rhine, and some forty bombs were thrown. At 8 a.m. a biplane appeared over Tullingen heights, and from the colours it was recognised as British. It was followed by five others, which were French.

The British machine came down low over Haltingen station and dropped five bombs on empty carriages. Three carriages, minus passengers, were destroyed.

The bombs smashed the gas conduits, and a gas tank took fire, and soon the fire spread to the station buildings. The flames could be seen from Swiss territory.

The biplane dropped three bombs farther on at the junction of the line for Bâle and Freiburg.

The enemy opened fire on the Britisher, and one shell disabled his machine between Hegenheim and Burgfelden, where it came down. The two occupants were taken to hospital at St. Ludwig.

[What a British aviator was doing on the Eastern Frontier is not known, unless it was a British pilot in the French service carrying British colours for his own satisfaction. Or it may have been a British aeroplane lent to a French pilot for purposes of comparison with the French makes.—Ed.]

\* \* \*

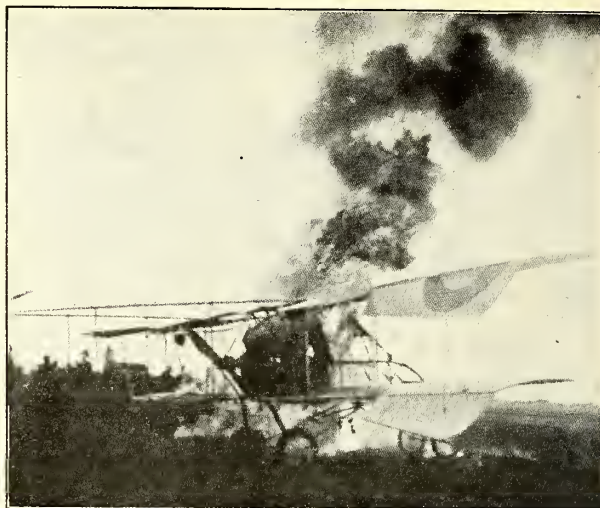
The General Commandant at Stuttgart announced that at 9.15 a.m. on April 16th a French biplane attacked the powder factory at Rothweil, dropping bombs which killed two civilians and wounded another. Work at the factory suffered no interruption. The material damage done was small. The aviator, whose machine was damaged by shots, made off in a south-westerly direction.

\* \* \*

The Geneva correspondent of the "Temps" gives the following details of the air raid on Haltingen about April 16th:—

"The raid was effected by a British biplane, which, thanks to the morning mist, was able to approach the Rhine at about 7.30 without being seen by the patrols. It threw four bombs on the southern part of the railway station of Haltingen. No personal injuries were suffered, but the goods railway line was destroyed for a distance of 100 metres.

"Towards midday another squadron of French aeroplanes was reported in the region of Volkensberg. At about the same time an aeroplane engaged in reconnaissance flew over Lorrach, in Wiesensthal."



A photograph from a German paper of a Voisin biplane shot down at Freiburg in Breisgau, and presumably fired by its pilot as he alighted.

The "Central News" correspondent at Geneva states that the activity of the Allies' aviators is causing among the Germans serious fears for the safety of the airship sheds at Friedrichshafen, where "several huge Zeppelins, with a gas-holding capacity of 25,000 cubic metres each," are alleged to be under construction.

[If there is any truth in this report it indicates the construction of Zeppelins of inferior size, for an earlier Zeppelin had a capacity of roughly 1,000,000 cubic feet, whereas this only represents about 860,000 cubic feet.—Ed.]

\* \* \*

The story of an aerial raid on Hamburg is now found to be a falsehood invented by a printer out of work.

\* \* \*

An interesting account of the operations during the period of the Neuve Chapelle action is given by the correspondent of the "New York Times," who has been in the German lines. The narrative ends with an account of the British aerial enterprises against Lille, which runs as follows:—"A big yellow captive balloon hangs over the town to give warning of the approach of British aviators. On many buildings as the correspondent entered the town were numerous handbills with 'Deux Aviateurs Anglais' printed on the top in huge letters. The bills recited in French that an English aeroplane had been forced to land in the suburbs on March 11th, but that the pilot and observer had escaped into the town and were thought to be in hiding. A cash reward was offered for information leading to their capture, and the death penalty was threatened to anybody who harboured or concealed them."

[Presumably the notices referred to Lieut. Mapplebeck, R.F.C., who was fortunate enough to get safely away, the Germans assuming that the machine carried a passenger also.—Ed.]

#### AUSTRIA.

A telegram to the "Journal" from Rome states that one of the two Zeppelins which the Austrian fleet had received from Germany, and based at Pola, fell into the sea on April 16th while manœuvring over the Adriatic, and was completely destroyed. Its crew perished.

#### BELGIUM.

It was reported from Amsterdam on April 13th that British aeroplanes coming from the sea on the 12th flew to Bruges, where they dropped bombs on the railway line.

\* \* \*

The "Tyd" (Amsterdam, April 14th) learns from Sluis that a Zeppelin was fired at and damaged near Ypres on Monday night, but managed to return to Thielt, where it landed in a

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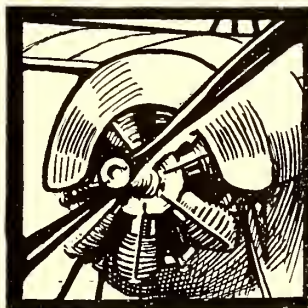
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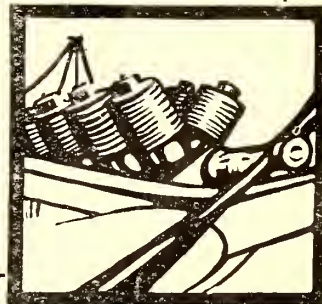
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battered condition. [Doubtless the one mentioned in the French communiqué of the 14th.—Ed.]

On Sunday morning, the 12th, four Allied aeroplanes appeared above Bruges and bombarded the place. On Monday an aviator dropped bombs on the old docks at Bruges, destroying two houses.

#### HOLLAND.

It was reported from Amsterdam on April 13th that a foreign aeroplane was seen flying over Flushing and Middelburg on that afternoon. Dutch soldiers opened fire upon it and the aeroplane eventually came down at Goes, on the island of South Beveland. The machine was found to be German, and in it was a German officer, a German soldier, and a man who acted as aviator. They were captured and are now interned.

\* \* \*

The "Handelsblad" (Amsterdam, April 15th) learned on that day from the island of Vlieland that a Zeppelin had just passed travelling from east to west.

[Which probably gave rise to the rumour current in London late that evening that an "enormous" fleet of Zeppelins was making for London. It was a pity they did not arrive as it was a nice clear night and perfect weather for aeroplane operations and anti-aircraft gunnery.—Ed.]

#### RUSSIA.

The communiqué of April 17th says:—

The activity of the enemy's aeroplanes is particularly manifested in the region of Ostrolenko and Nowogrod (north and south of Lomza) and Ciechanow (a few miles south of Mlawka). The enemy's machines operate in flotillas of 12 or 15, flying together, and throwing as many as 180 bombs on the town or village which they attack, but causing only insignificant damage and never loss of life. Our airmen reply with a smaller number of large bombs.

\* \* \*

A Petrograd telegram states that on April 18th a German aeroplane dropped bombs on the property of Count Sobansky, near Warsaw, on which there is a large sugar refinery. The manager, cashier, and a book-keeper were killed and several workmen were wounded.

#### TURKEY.

It is reported from Rome that on April 17th an enemy aeroplane flew over the Fleet and the port at Tenedos and dropped bombs. No damage was done. A seaplane chased the aerial raider back to Gallipoli.

\* \* \*

The following account of the operations at Smyrna is taken from the letter of a naval officer dated subsequent to March 10th:—

"We continued firing on Monday and Tuesday at the various forts, and although there is no doubt we shook them up considerably, you can understand that it was extremely difficult to estimate the actual damage done as the forts are extremely well hidden and the topography of the country absolutely lends itself to that sort of thing. We had two seaplanes with us in the seaplane ship, but even they had great difficulty in ascertaining the damage done."

#### EGYPT.

The following statement was issued officially on April 18th:—

On the 16th inst. three aeroplanes made a flight from the Canal to El Sirr, some twenty-five miles south of El Arish, dropping nine bombs, which were effective. About 150 to 200 tents were seen. The distance flown was more than 170 miles. No other enemy's troops were seen this side of El Sirr, though one or two small posts of about twenty men are known to exist.

On the same date a French cruiser bombarded the camp near El Arish, a seaplane directing her fire. No large number of troops were seen, though the enemy's guns opened fire both on the cruiser and on the seaplane without hitting either of them.

On the 17th a French cruiser, again assisted by seaplanes, bombarded the enemy's camp well to the south of Gaza town. Considerable damage was caused to the troops.

#### SOUTH AFRICA.

An officer of the Witwatersrand Rifles writes as follows from near Aus:—

"The aviator who visits us appears to know his business and has an excellent machine—a Taube. The engineers at Luderitz Bay found a working model of this machine. It is absolutely perfect in every detail and naturally most interesting. This model is from 4 to 5 ft. long.

"It is a grand sight to see the Taube sailing over our camp, but on account of his bombs somewhat awe-inspiring. As you will have seen from the papers, according to Windhuk news, our gunners have made very good practice at him. He always flies very early in the morning and at no other time—I presume owing to the fact that there is no wind at this time of day, but for the rest of the 24 hours it flows from all directions."

\* \* \*

A telegram from Capetown says that Mr. Walter Greenacre, of Durban, has presented two anti-aircraft guns to the Union Defence Force.

#### CANADA.

According to a message from Ottawa on April 14th, volunteers for the Royal Naval Air Service are being called for in Canada. They must be under thirty years and preferably between nineteen and twenty-three. The Volunteers will be trained in Canada and sent to England. It would be interesting to know how Canada proposes to provide training of any kind for air mechanics.

#### U. S. A.

An astonishing article, written by one Gordon Bruce, appeared recently in the "New York Tribune," professing to deal with the "chin-wagging"—one can call it by no other name—of that "Captain" Janney of whom no one in this country seems to have heard. The heading of the article ran thus:—

"Veteran British Airman, Here to Train Canadian Recruits, Finds War Life Dull Except in Spots."

"Veteran" is good, considering that he has not flown in England, or—so far as one can gather—on the Continent either. The article continues:—

"Two ruddy-cheeked young men, attired in British uniforms, sat yesterday at the luncheon table in the Aero Club of America. One was Captain E. L. Janney, squadron commander in the Royal Flying Corps. He is fresh from the battle front. His companion was Lieut. Harley G. Smith. They are in America on seven months' leave for the purpose of training recruits for the flying corps, which soon will be a part of the Canadian forces."

This Janney is not even an officer of the Royal Flying Corps, and if he is still an officer in the British-Canadian Service one would like to know what he was doing in uniform in a neutral country if not an Embassy Attaché or an interned officer. He is reported to have said:—

"My actual fighting experience covered a period of nine weeks. I was stationed with my squadron at Bailleul, in France, near the Belgian border. Most of the time it was rather dull. That is to say, the percentage of time when we were actually doing anything was small."

So far as one can gather, the time when he was doing anything, except talk—if he was ever there at all—was nil. Later on he said:—

"One feature of air fighting that has come to the fore rapidly is dart-dropping. Steel darts were first used by the French, but have come into general use among the British and German forces. I daresay that more damage can be done in the trenches by the dropping of explosive bombs, but the darts are more popular among the fliers."

This is a lie. The Royal Flying Corps hardly use darts at all. They regard them as rather unsportsmanlike and somewhat ineffective. He describes dart-dropping thus:—

"There is not much preparation required for dart-dropping. You just scoop them up and shovel them over the side."

Which shows that he knows nothing about darts, which are not dropped in that way at all. He then proceeds to show his ignorance about aeroplanes thus:—

"The Taube, which is popularly supposed to be of moderate speed, is capable of 86 miles an hour. It is unable to climb faster than 750 feet a minute, as against 1,200 ft. a minute by the British machines."

Which is liable to bring a smile even to the face of a box-kite pilot. Then we come to the real business, for the article continues thus:—

"The business which has brought the two officers to this country is the establishment of an aviation training school at Toronto. Two Farman biplanes have been shipped from England for use by the students, and Captain Janney announced that he had purchased the old Farman machine owned by Clifford B. Harmon, of this city."

This was an aged 50-h.p. thing of 1911 type.—To continue:—"The school is open to civilians who desire to enlist in the flying corps of Great Britain, and those who qualify will accompany the Canadian expeditionary forces. Four months are allowed for training. In order to be sure that the student will carry out his intention to enlist, a fee of \$500 will be charged for the training. This will be returned in the form of a bonus of \$625, which will be paid by the Canadian Government when the student has qualified. The actual bonus is \$375, but there is a uniform allowance of \$250."

The \$500 is evidently the business which brought the two "officers" to the States. It is not the custom of the British Empire to take deposits from those desiring to serve it, and it seems improbable that any innocent American handing over his \$500 will ever see it again, or an aerodrome. The American is the most gullible person in the world—as anyone can judge by reading the advertisements in the American press—but one hopes that no one has been silly enough to be taken in by this swindle.

Meantime, it is to be hoped that the Department of Military Aeronautics has already heard of this insult to the British uniform and has taken steps accordingly through the Foreign Office to have a stop put to this adventurer's career.

Thanks are due to a firm of American aircraft manufacturers who sent the cutting with the sarcastic remark: "Captain Janney is going to make all our fortunes." But who is this "Gordon Bruce" who drags the Aero Club of America and a well-known New York paper in as advertisements for the long firm game?

### Aircraft and the War.

At the National Liberal Club on Monday evening an address on "Aircraft in the War" was given by Mr. Hugh Burroughes of the Aircraft Manufacturing Company and the Gnome Engine Company. The interest aroused by the subject was evident from the over-crowded state of the room. The paper, which was of great interest though not of a technical nature, was followed with the closest attention, and was divided into two parts, which Mr. Burroughes described as "The effect of the War on Aircraft" and "The Effect of Aircraft on the War." A short discussion took place at the close.

The success of the meeting suggests the desirability of extending these educational lectures as far as possible while the public are really interested in learning more about the developments of aviation from men who know something more about it than the average journalist of the day appears to do.

### The R.N.A.S. Comforts Fund.

It is now possible to give an account of the money laid out during the fourth and fifth months of the Fund's existence.

JANUARY, 1915.

FEBRUARY, 1915.

	£	s.	d.		£	s.	d.
Jerseys .....	37	14	0	Pants .....	36	19	0
Gramophones ...	15	16	0	Vests .....	7	1	0
Wool Pants .....	90	19	11	Jerseys .....	23	18	0
Sundries (Rail expenses, Sacks, Cases) .....	6	3	5	Provisions to Dunkirk R.N. A.S. Men .....	4	15	9
Vests, Wool .....	64	18	4	Postage for three months .....	5	16	0
Shirts, Flannel ...	4	9	1	Shirts .....	12	2	4
Sweaters .....	6	18	0	Sweaters .....	33	4	6
Cardigans .....	3	6	5	Buttons for Cardigans and Shirts (home made) ...	18	9	
Hessian for Bales	6	3		Sacks (Hessian) ...	1	4	0
Buttons for shirts	1	0		Cheque books ...	4	2	
Spent Oct., Nov., and Dec. ....	360	8	8	Rail expenses for Sacks, Cases, and Sundries ...	10	5	7
	591	1	1	Carting to Station	12	6	
					137	1	7

Spent to end of Jan., 1915 ..... 591 1 1      Total to end of Feb. .... 728 2 8

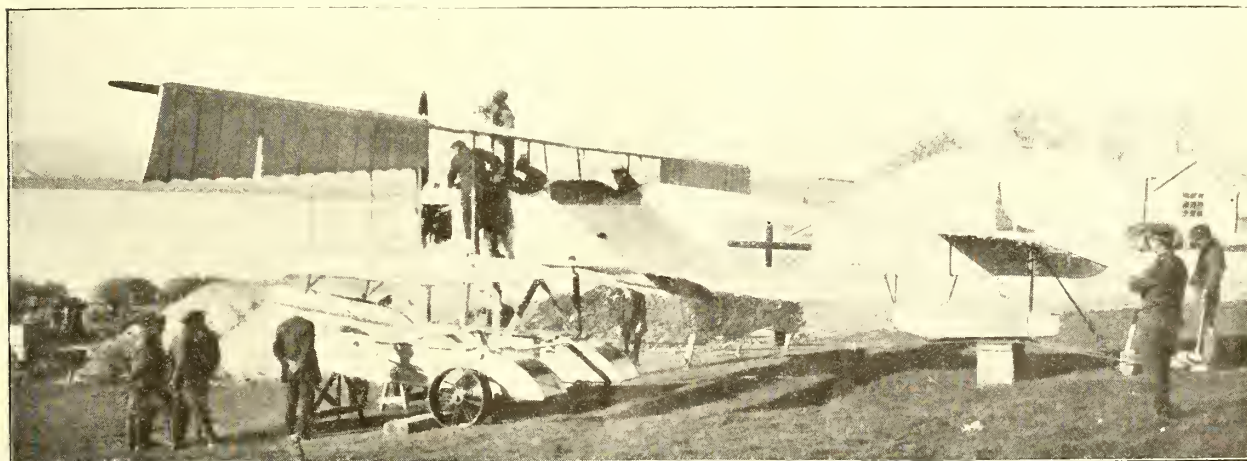
Mrs. Sueter has sent a third consignment of garments to H.M. Seaplane Carrier "Ben-my-Chree" during the week.

The following cash contributions have been received since the publication of the last list: Proceeds of concert given by employees of White and Thompson, Ltd, £4; Special subscription by White and Thompson, Ltd. (April 14th), £2 14s. 9d.; Employees, White and Thompson, Ltd. (weekly contribution), £1 2s.; Vickers Ltd. (Woodworkers' 18th con.), 6s; Mrs. Hartford, 5s.; Total for week, £8 7s. 9d. Grand Total to date, £924 8s. 7d.

Further contributions in cash and kind, which are urgently needed, should be sent to Mrs. Sueter, The Howe, Watlington, Oxon.

### A Change in Name.

The Sunbeam aero-engine will in future be known officially as the Sunbeam-Coatalen Aircraft Engine, and will be sold as usual by the Sunbeam Motor Car Co., Ltd., of Wolverhampton. This engine, in both sizes, is now doing very good work. In its earlier forms it suffered from a mysterious loss of power after running for a period of half an hour or so. It was discovered that this was not due to any defect in design or material, but simply to the lubricating oil losing its properties when it passed a certain degree of heat. Arrangements were then made for cooling the oil and now no trouble ever arises.



CHILLY WORK.—Tuning up a Short Seaplane in the open, prior to launching. Even in Summer the work is none too warm. Hence the appeals for the R.N.A.S. Comforts Fund.



## THE INVASION OF ENGLAND.

On the evening of Wednesday, April 14th, German aircraft paid the North-East Coast a visit. At 8.20 p.m. an airship, said to be a Zeppelin, appeared over Blyth, whence it proceeded to Bedlington, Morpeth, Cramlington, Wallsend and Hebburn.

All lights were promptly extinguished, and the bombs which were dropped at intervals did but minor damage. The pilot was apparently trying to locate Elswick, but he was evidently out in his allowance for leeway, or mistook Blyth for Tyne-mouth and followed the wrong river. It is said that twelve bombs in all were dropped.

It is reported from Newcastle that several aeroplanes went up when the Zeppelin appeared, but as the whole tour of the airship only took 35 to 40 minutes they were too late to find her in the darkness. Presumably the anti-aircraft guns were not used owing to the impossibility of spotting the ship in the dark, and because it was recognised, very sensibly, that firing at random would probably do more damage on the ground than in the air.

### The Suffolk Attempt.

At about 12.30 on the following morning, April 15th, an airship visited Southwold and made a circular tour occupying about an hour, after which it disappeared over the sea at Lowestoft. Twenty-five bombs were thrown in a circle of Henham Hall hospital of about 300 yards diameter, the Germans apparently mistaking Henham Hall for Lowestoft or for some military centre of importance. Bombs were also dropped on Maldon. A certain amount of damage was done to property but no one received injuries.

The Berlin official account of these raids says: "During the night of April 15th-16th naval airships successfully bombarded several defended towns in the southern part of the British East Coast. Before and during the attacks the airships were heavily fired at, but returned undamaged."

These remarks are justifiable to the extent that Lowestoft, being a trawler port, might reasonably be expected to harbour mine sweepers, and Maldon and its river might be the home of destroyers or submarines, besides which, all towns in these days house a certain number of soldiers.

The following news, officially circulated through German wireless stations, has been received by the Marconi Company:—

"Berlin, April 16th.

"According to reports in the newspapers two houses were damaged by bombs in the villages visited by the German airships. In Wallsend a bomb went through the roof of a house, broke through the ceiling, and caused slight injuries to the occupant, an old woman."

These remarks, coming from a German source, are noteworthy, because they distinctly convey the idea that someone in Berlin is becoming peevish with Zeppelins and desires to discredit their utility as weapons of offence. It is known the German flying officers despise airships almost as much as our own R.F.C. does.

The crews of the trawlers "Grecian Prince" and "Rhodesia," which shortly after the former raid put in at North Shields, state that they saw an airship heading towards Blyth at 7 p.m. and declare its number to have been "Z.9." If this is the case, they probably misread "L.9," for the German official account states specifically that the airships were naval.

It is, of course, possible that one airship might have performed both raids, as there was ample time to fly from Newcastle to Maldon, but this is not likely, as the airship would scarcely have passed Hull and other big towns in peace.

The most extraordinary thing is the small number of bombs actually dropped, for naturally none would be taken back to Germany.

### The Aeroplane Effort.

During the forenoon of the 15th an aeroplane, called by some papers a "Taube," and by others a biplane—it certainly could not have been both—flew over Deal, Sheerness, Eastchurch, Sittingbourne, Faversham and Canterbury, dropping sundry bombs en route. No damage was done. An aviator, said to be from Eastchurch, was seen in pursuit, and the machine was fired upon by rifles and machine-guns. It is also stated that a French aeroplane pursued the German across the Channel.

The invader is stated to have flown over Sheerness at a height of about 4,000 ft. before visiting Faversham, and he left via Whitstable and Herne Bay.

As a matter of fact he was at a height of at least 10,000 ft. when over Sheerness, and the bombs apparently meant for the town fell in the marshes several miles away.

A resident in the neighbourhood states that three aeroplanes, two of them monoplanes, were seen to "take the air" when the invader was already well over head. The monoplanes were apparently still climbing when the German returned to Belgium, and might be climbing still, for all the chance they were ever likely to have of catching him. The third machine, a fast scout, apparently reached the German's level fairly rapidly and then must have lost sight of him, for it is reported as being seen chasing at great speed up the Thames, though the German appears to have gone South instead of towards London—doubtless a breach of the rules of war for which he will apologise in due course.

It does not, unfortunately, appear as if our aeroplanes distinguished themselves in any way during these three visits. It may be that they were purposely kept on the ground in the hopes that absence of attack would tempt the Germans to appear in greater force next time and so afford us a chance of wiping out a number of them. This, however, seems almost too subtle a plan for the English mind.

The other alternative is that no one was ready to start, despite the lengthy warning given in each case of the advent of aircraft. In this case it appears as if some officers of the R.N.A.S. would be the better for having an inquiry made into the utility of retaining them in the King's Service.

The fact that no damage was done by the Germans does not affect the question as to why no damage was done to the Germans.

Apropos the aeroplane raid, a reliable correspondent at Wye writes to say that he saw the German visitor and a pursuing B.E. "amidst much din of A.A. guns and bombs." He states that the enemy was at a great height, but the enormous span of his machine was notable. It was difficult to determine whether the machine was a seaplane or not, but it either had very large ailerons, or else a modified retracting wing formation, more or less à la Henri Farman. This machine was noticeably faster than the pursuing aeroplane, but as it was also a great deal higher, it may have been in a different air current.

### On the Cost of Killing a Hen.

In connection with the recent Zeppelin raids, one of which produced the net bag of one hen, a slide-rule expert sends the following calculations and opinions:—

The cost of killing a common barn-door fowl varies considerably with the method employed.

Let it be assumed that the slayer of the bird is not the owner, and, moreover, that he cannot catch the elusive biplane (I mean biped), also that it is absolutely necessary for his moral development that this overloaded monoplane should discontinue its feeble attempts at flight.

The following methods of extermination are then feasible:—

(1) To take a half-brick in the hand and hurl it at the fowl. After a few attempts the desired result should be attained. This method is somewhat uncertain, but costs absolutely nothing.

(2) To hire a small boy, armed with a catapult, to impel small stones at or in the direction of the bird with this illegal weapon. The cost would be low, as the small boy could be hired with half a pound of bullseyes and a packet of Woodlines. Total cost, 3d. Another uncertain method.

(3) To purchase an air-gun at the cost of half a sovereign and shoot the bird. The gun is not destroyed in the act, has a long life, and may be used to slay more hens. Suppose that 100 hens may be slain in this way, the cost of killing the single bird will be—

	£	s.	d.
One per cent. on capital outlay of 10s....	0	0	1.2
Four slugs at 9d per 1,000 ...	0	0	.036
Total ...	0	0	1.236

(4) A shot-gun may be purchased and used. This requires considerable capital expenditure, but is fairly certain—

	£	s.	d.
Five per cent. on capital outlay of £10 10s.	0	1	0
One cartridge ... ..	0	0	1.2

Total ... 0 1 1.8

(5) A maxim gun may be purchased. This is, of course, a very extravagant method, but absolutely certain, although the value of the dead bird is reduced—

	£	s.	d.
Five per cent. on capital outlay of £350 ...	1	15	0
100 rounds of ammunition ... ..	0	18	0

Total ... £2 13 0

There are many other methods, such as using a 15-inch gun. But there is yet another way much beloved of Germans. No ordinary man could afford it. Even a multimillionaire would find it cheaper to try to break the bank at Monte Carlo. But Governments can afford to pay for their amusements on a lavish scale. It is a somewhat sporting method, as the chance of killing the right fowl is small, and its value afterwards is negligible. The method referred to is to send a Zeppelin 250 miles to drop a 100-lb. high-explosive bomb on or near the fowl.

The estimate of the cost is based on the supposition that the airship will make five such trips before it is wrecked by adverse winds or destroyed by hostile aircraft—

	£	s.	d.
20 per cent. on capital outlay of one			
Zeppelin at £200,000 ... ..	40,000	0	0
640 galls. petrol at 1s. 6d. ... ..	45	16	0
64 galls. oil at 2s. 7d. ... ..	8	5	4
3 bombs at £73 ... ..	219	0	0
Wages of 18 men at varying rates ...	17	13	2½

Total ... £40,290 14 6½

You will note I have not included the cost of the gas. That is given free in these notes.

Now this is "Some" price for a fowl. But it is a modern method which has cost millions to bring to its present perfection, and there is joy in the Land of the Sausage.

### A Convincing Mishap.

Rather a curious accident occurred the other day to one of the new White & Thompson land-going biplanes, which accident is, however, likely to inspire confidence in this make.

The machine, which is a tractor biplane with a 70-h.p. Renault, was being flown by Mr. Gordon England in quite a stiff wind when a cylinder cracked and the engine retired from business. The only possible way of getting down was to do a sharp turn over the sea to land on the sands. Unfortunately there was not quite room to do it, so the machine alighted in about 2 ft. of water, which checked its progress so suddenly that it toppled over on the points of the skids, balanced for several seconds with its tail in the air, and then, a gust of wind coming along, it turned right over on its back, remaining balanced on the upper plane and the rudder-post.

The pilot, after unstrapping his belt, turned a slow somersault round the control wheel and got out merely with wet feet. The engine was then taken out and the machine turned right side up and it was brought ashore. On examination it was found that the only real damage done was a broken propeller and broken skid-tips. Naturally, the upper plane was deteriorated by the water, but no actual breakage had occurred, and the monocoque fuselage had stood up perfectly.

These machines have shown themselves to be astonishingly fast and stable. Both the pilot and passenger are excellently protected. The construction of the fuselage is such as to inspire considerable confidence in pilots who have to fly over gun-fire, for quite half of it could be shot away without the tail section breaking off.

Altogether, the machine is one of the best examples of its kind, reflecting great credit on Mr. Beadle, the designer, White & Thompson, Ltd., the constructors, and Messrs. Williams, of Littlehampton, who construct the fuselages. It is, in fact, a type which might very well be reproduced by other firms who are at present wasting their time on less effective designs.

### FLYING AT HENDON.

On Thursday afternoon a very considerable amount of flying took place; in fact, far more than could be seen at the Thursday displays prior to the war. Very good weather also prevailed during the week-end, particularly on Sunday, and a large amount of flying was done.

On Saturday, which was slightly gusty in the early part of the afternoon, proceedings started at 3.30 p.m. with Instructors Osipenko and Winter on 50-h.p. Grahame-White box-kites, followed by Mr. Manton on the 70-h.p. Grahame-White biplane, all three taking up numerous passengers.

A bomb-dropping demonstration was held, Messrs. Manton and Osipenko dropping dummy bombs onto a target in the centre of the aerodrome from about 200 to 300 feet, and the results were surprisingly good. Mr. Hall made a fine high flight on a 45-h.p. Caudron, and Mr. Roche-Kelly gave one of his remarkable displays of steep banking on a Beatty-Wright.

Shortly after 4.30 Mr. Winston Churchill arrived at the aerodrome and during a two-hours' visit he inspected most of the machines, which were drawn up in review order.

Another incident of interest to the public was the arrival of Mr. F. W. Goodden, now second lieutenant in the R.F.C., on a B.E.2 from Farnborough, at a height of 5,000 feet. Mr. Goodden also took a friendly trip on the new L. and P. Caudron on Sunday morning.

On Sunday a large number of officers of both Services were present, and a considerable number of them had passenger-flights. Flying commenced at 3 p.m. and continued until dusk. Flights were made by Messrs. Hall (45-h.p. Caudron), Warren (60-h.p. L. and P. biplane), Roche-Kelly (50-h.p. Beatty-Wright biplane), Baumann (Ruffy-Baumann biplane), Wright, a new instructor at the Grahame-White School (50-h.p. G.-W. biplane), Osipenko (50-h.p. G.-W. biplane), and Manton, who took up parties of passengers in the Grahame-White five-seater. The two last named also dropped dummy bombs.

The aerodrome presented a very animated appearance, the various schools continuing to give instruction while the exhibition and passenger flights were in progress. No less than 34 passengers were carried on Sunday afternoon. Altogether, a most successful week-end, and larger attendances are to be expected in the future as people get to know that really first-class flying may be seen by the public.

On April 24th and 25th special exhibition and passenger flights will be given, and these will also be held every Thursday, Saturday and Sunday afternoon throughout the season.

### Concerning Photographs.

Readers who are interested in photographs of aviators will do well to remember that the most complete series of such photographs is in the possession of Mr. F. N. Birkett, 97, Percy Road, Shepherd's Bush, W. Practically all portraits of aviators which have appeared in *THE AEROPLANE* for some months have been taken from the "F. N. B. Series," among which was the last frontispiece of this paper, though Mr. Birkett's name was omitted in error. Incidentally, an error was made in the same picture by ascribing Flight Sub-Lieutenant J. B. Ferrand, R.N., to the Beatty School, when in fact he was trained at the Grahame-White School.

### To Lecturers.

Those who are thinking of giving lectures on aviation will do well to note that the Grahame-White Aviation Co., Ltd., of 32, Regent Street, W., have some excellent sets of lantern-slides dealing with aviation. The slides include many photographs of up-to-date aeroplanes. The firm will be pleased to loan these slides free of charge to officers of either Service who may wish to use them in educating their men.

### An Address to be Noted.

Owing to a typographical error the address of the Acetylene Corporation, Ltd., 49, Victoria Street, Westminster, has appeared in that firm's advertisement as No. 99. Aircraft manufacturers are requested to note that the correct address is No. 49. Letters addressed wrongly appear to have gone astray, so any readers who may have written to the higher number during the past week or two are asked kindly to write again, when attention will be promptly given to their requests. The present demand for a reliable welding plant makes it important to know exactly where such outfits can be procured.



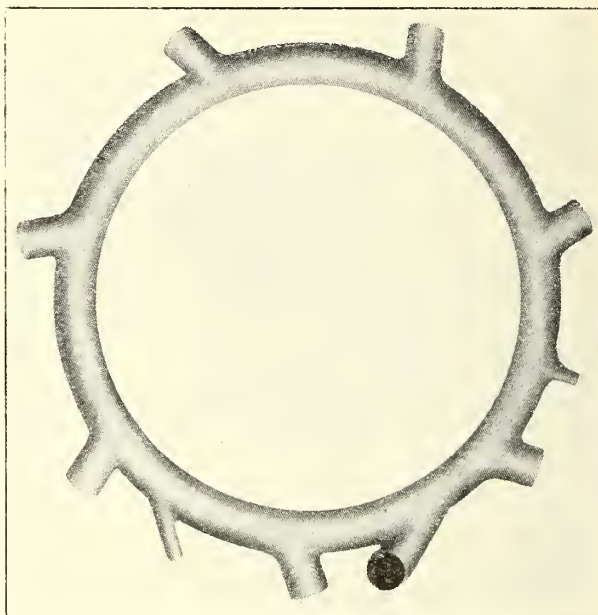
## Aero-motors: In Kind and Construction.— *Continued*

BY GEOFFREY DE HOLDEN-STONE.

Having seen why such a radial motor as the Salmson should work, and the physical whys and wherefores of its very special design to that end, we have next to see how it does actually work, from the asinometric as well as the mechanical standpoint. For asinometry—of which all writers are patient exponents—is the contrary science to abstruse and  $\alpha$ -changing mathematics. Chiefly, it is a humane method of killing contentious asses by depriving them beforehand of their half-baked preconceptions against the fact. That is to say, it is the art of presenting the otherwise obvious proposition so clearly that if it penetrates their comprehension, it will assuredly be patent to the average reader. It is also intended to fortify the intelligence of editors, and to protect them against illiterate literasts, mechanical quack salvers, persons who believe that A.O. mushroom valves do not rotate, or that the earth is flat; disrespectors of the equator and other cranks. Naturally, this science of seeing through, and reducing men and things to ten-cent equations, besides saving time, simplifies mechanics as well as explaining halfpenny journalism. The parent of judicious invention, it is also useful about the house. Indeed, no suburban home can afford to do without it.

### The Salmson Action.

I depend, therefore, upon its irresistible processes to explain, curiously enough, another crank—the Salmson motor's—and particularly that crank's need to be just as it is, and nowise else. This, I think, we can begin to see best by comparing the working system of a radial motor with that of its antithesis, the fixed-crank rotary. In the latter it is easy to see that with all pistons freely—that is, rotarily—anchored at an invariable distance from a fixed point—the wrist-pin—which is eccentric to a fixed shaft centre—around which the cylinders too are anchored at an invariable distance—an explosion effort in any cylinder can only do two things. Either it must blow the cylinder-head off, or it must seek relief through the mobility of piston or cylinder. But piston mobility is out of the question, because the piston is unable to move outside or inside the circle of its tether to the wrist-pin. Relief then can only come by moving the cylinder-head as far eccentrically to the wrist-pin as possible. But the cylinder being likewise immovable out-



The Salmson Induction Hoop.

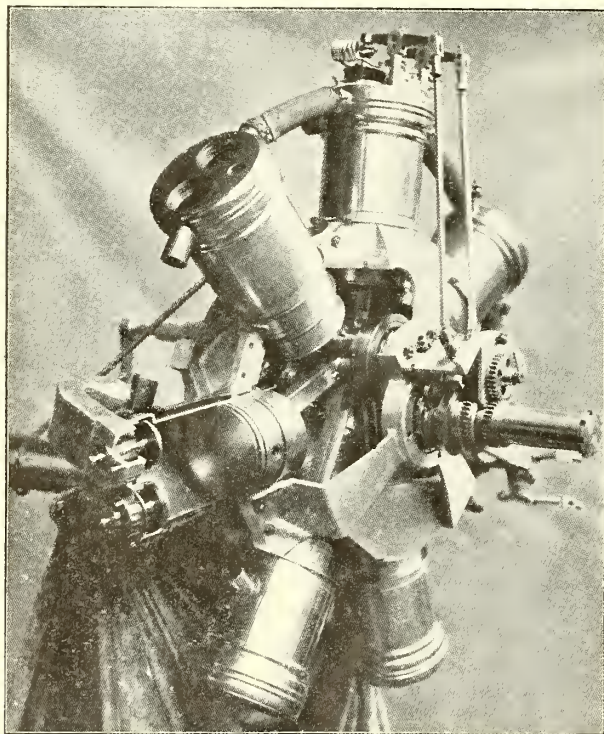
wards from its invariable-distance tether to the shaft-centre, can only move sidewise in a new circular-plane to become eccentric to the wrist-pin. Consequently it takes the rotary motion, which is thus inevitably produced round its tether-point. In other words, the cylinder-head retreats from the piston—not the piston from the cylinder-head in the ordinary fashion of motors—under the effect of the explosion.

And just here it is important to notice in a rotary that the presence of a huge master-grip does not upset the balance of parts, because it merely revolves on a fixed wrist-pin, and has no reciprocating motion.

Yet in the radial—but stationary cylindere—Salmson; the reverse conditions exist. The cylinders, of course, are anchored at an immutable distance from the shaft-centre; but that centre, as embodied in the journal, is free to revolve, and the wrist-pin to rotate around it. However, before going further into the *actual* mechanism of this particular example, let us review the general mechanical conditions that control the working of any radial motor-proposition. Now we have, first, the fact of the explosion efforts driving *inwardly* from seven—or nine—radial directions, equidistant round a circle, instead of outwardly as in a rotary. If, then, the crank were duly counterweighted, it is conceivable that such a motor would continue to run—after a fashion—provided that there was a master-grip to maintain the thrust in one and the same direction of rotation. Otherwise the motor—under certain conditions of firing and misfiring, or any change in the shaft speed or power of the explosions—might reverse, or dwell and fire on dead-points: both fatal defects.

Yet here, secondly, just because the cylinders are stationary we have to consider piston and rod reciprocation, and therefore the absolutely essential balance of these working parts in motion, not only as to their weight, but in the relation of that weight to the varying cycle. So, even if we had room for the purpose, and other mechanical conditions permitted, further counterweighting of the crank to balance the rotating weight of a bulky master-grip—the odd man out—would assuredly upset the carefully achieved balance of the parts to compensate the varying cycle pressures. On the other hand, short of some such provision, the torque-effect would amount to one violently laboured piston-kick with six or eight little ones to follow. So the use of a master-grip, or anything like it, is inevitably barred.

(To be continued.)



A Salmson Engine Cut Open for Inspection.

**THE SERVICES AND LABOUR.**

Since last week's *AEROPLANE* appeared information has been received concerning several strikes, or threatened strikes, in the aeroplane industry. It is, of course, impossible to influence a certain, and, unhappily, a very numerous, class of British workman except through his pocket or stomach, so it would be waste of time to appeal to the patriotism of the men, or to their duty to their "pals" in the Army—as the Army Advertising Department still foolishly tries to do—so these notes are written primarily for people in the Services and those who, though not in uniform, are doing their best for the Services.

One may feel fairly sure that when the troops come home they will get their own back from the non-working man whose ill-will has cost them so much in casualties through delay in armament supplies. Also, one hopes that employers of labour will mark the men who are causing trouble, and will replace them immediately the war is over by discharged soldiers.

**An Interfering Union.**

One recent strike, which has delayed the delivery of a number of important aeroplanes and parts, has been caused because a man was dismissed for gross impertinence to his employer and his foreman. He happened to be a member of a thing called the Cabinet-Makers' Union, which, because its members operate on wood, takes upon itself to include aircraft wood-workers, and wood-butchers of all sorts. This precious union called out all the union men in the shop, and picketed the works to prevent non-union men from taking jobs there.

The foremen and leading hands remained loyal to their employer, knowing that he was in the right, and that shop discipline is as important to regular output as military discipline is in its own sphere. Still, the men went out, and the neighbourhood now beholds the elevating spectacle of a number of able-bodied men—mostly young enough to be in uniform—lounging about, in and out of the local pubs, and only really working when arguing with another man to prevent him from working.

A pretty spectacle, forsooth, in a country at war, and a strange commentary on our system of self-government. Can one imagine, in an efficiently organised country, like Germany for example, a confederation of commodore-carpenters being permitted to hang up deliveries of armament supplies? In any other country but this the offender would have been knocked down for his impertinence and then locked up for interfering with the nation's work. And probably the committee of the blessed "union" would have been mobilised for military duty.

**Unpractical Sympathy.**

Another strike occurred because a works manager dismissed a metal worker as hopelessly incompetent, although he had given him two months' trial so as to let him have a fair chance of picking up his new job. Some hundreds of men went out "in sympathy" with him, and held up the deliveries of many aeroplanes for days.

It was pointed out to them that the non-delivery of two or three machines might mean that certain pilots would be unable to carry out important reconnaissances, so that valuable information might be lost, and many thousands of lives sacrificed in consequence, and that the pilots might have to go out on inferior or worn-out machines, and be shot down and killed as a result. That did not influence the men a scrap. All they wanted was to see their "pal" reinstated and paid for spoiling valuable material—valuable because it is hard to get, and not for its mere value in money.

Personally, in a case like that, I should recommend reinstating the man—who, after all, was not impertinent and was not upsetting discipline—and paying him his wages to walk about with his hands in his pockets doing nothing, for it would be folly to let him spoil any more work, and he would soon be the laughing-stock of the shops. The "stay-in strike" has been tried by workmen. Perhaps the "stay-in lock-out" may be a useful weapon for employers.

**A Lying Argument.**

Apparently the argument in this case was that if employers can prevent men from leaving and going to other firms, the men have an equal right to prevent employers from sacking them.

As a matter of fact employers cannot and do not prevent men from leaving. There is an arrangement, officially approved by Government, that one firm shall not engage men from other firms in the same trade. This is in the interests of the men as well as of the nation as a whole. It prevents a big, rich firm from buying men from the smaller firms by offering absurdly high wages. Some Government orders are placed on prices based on cost of production plus a fixed profit, and consequently such firms can afford to pay any wages they like, whereas a firm working at a fixed contract price per article cannot afford an unlimited wage bill. Hence the arrangement that one firm must not buy another firm's men, for a small but highly efficient shop, doing work employing men with special training, might be entirely disorganised by a few of the leading hands being bought away by another firm, and so the remaining hands might find themselves drawing worse wages, owing to decreased output.

If a man really wants to leave there is nothing to prevent him from taking a job at the nearest garage or carpenter's shop which is not engaged on Government orders. And if, after he has been there a week or so, he likes to take a job with another armament firm, no one can stop him, and no one can accuse the second firm of buying him from the first firm.

Either the men in question must be grossly ignorant, or else they must simply have used the incident of the other man's dismissal as an excuse for making themselves objectionable and for acting disloyally.

**Legitimate Grievances.**

Far be it from me to deny that there are legitimate causes for complaint among workmen, for employers are frequently to blame for discontent among their hands, but there can never be any excuse for stopping work. Men may make hostile demonstrations in front of an employer's private house if they like, outside working hours, but they should never "down tools" in such a national crisis as this.

A case came to my notice some time ago in which certain employees had a legitimate grievance, but it was promptly put right by a management which knew its job. In a certain shop the men had been working terrifically long hours and some were earning £5 or £6 per week on piece-work, and £3 to £4 on day-work. This meant that nearly all the skilled hands were earning from 50 per cent. to 100 per cent. more than their own foremen, who were working on a fixed weekly wage. Consequently, the foremen went in a body to the management and stated their case, adding, quite respectfully, that they could not continue in such an absurd position. The whole affair was settled in half an hour, and work never stopped for a moment. The reasonable demands of the foremen were satisfied, and everything is running smoothly. But in this case everyone went the right way to work and avoided friction. And that infernal nuisance, one of Germany's strongest allies—the Walking Delegate—was kept out of the argument.—C. G. G.

**School and Weather Reports.**

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
Hendon ...	Fine	Fair	Fair	Fair	Foggy	Windy	Fine
East Coast ...	Fine	Wet Wind	Fine	Fine	Fine	Fine	Fine
South Coast ...	Fine a.m. Wet p.m.	Fine	Rough Showy but Fine	Dull	Fine	Fine	Fine

**Hendon.**—AT THE GRAHAME-WHITE SCHOOL.—Instructors: Messrs. Manton, Russell and Winter. Pupils with instr.: Prob. Flt. Sub-Lieuts. Bone, Coleman, De Ville, Hutchinson and Wain. Strts or Rolling: Prob. Flt. Sub-Lieuts. Bone and Kirby. 8's or cires.: Prob. Flt. Sub-Lieuts. Feeney, Jacob, and Potts. Certificate taken by Prob. Flt. Sub-Lieut. Feeney. Machines: Grahame-White biplanes.

**AT THE LONDON AND PROVINCIAL AVIATION CO.'S SCHOOL.**—Instructors: Messrs. Warren and Smiles. Pupils doing strts.: Messrs. Gerrit Forbes, R. G. Gould, W. D. Smiles and J. A. H. Crook. 8's and cires.: Mr. Lincoln. Machines: Three tractor biplanes. A new 45-h.p. passenger machine was tried and found satisfactory.

**AT THE HALL FLYING SCHOOL.**—Instructors: Messrs. J. H.



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Moore and J. L. Hall. Pupils: Lieut. Blyth 15 strts. and half circs. on No. 1 tractor, Lieut. Raymond Barker 14 strts. on Nos. 3 and 1, Messrs. Laurence Minot 30 strts., Cook 35 strts., Hill 42 strts., Cini 20 strts., and Mitchell 25 strts.; Mr. Stevens making good strts. at 15 ft. on No. 1; Mr. Hatchman receiving instruction with Mr. J. L. Hall on No. 2 biplane.

At THE RUFFY-BAUMANN SCHOOL.—Instructors: Messrs. Baumann and James Bros. Pupils with instr.: Messrs. Bell (12), Roobaerts (22), Sykes (10), and Jackson (12). Strts. or rolling alone: Messrs. Bell (28), Roobaerts (40), Jackson (44), Kenworthy (28), Blandy (16), Sykes (28), and Cole (16). Mr. Haydon took his certificate on 45-h.p. Caudron at a good altitude.

At THE BEATTY SCHOOL OF FLYING, LTD.—Instructors: Messrs. G. W. Beatty, W. Roche-Kelly and C. B. Prodger. Pupils with instr.: Messrs. Allcock (55), Bond (21), Bright (140), Chapelle (30), Cooper (60), Crowe (30), de Meza (5), Faring (15), Fraser (40), Leong (20), Menfea (5), Morgan (5), Pierrot (15), Roche (35), Whincup (5), Wiles (5), Fitzherbert (10), Crossman (5), Johnston (5) and Rutherford (5). Machines: Beatty-Wright dual-control and single-seater propeller biplanes. Three passenger flights were taken on the 18th, and exhibition flights were given by Messrs. G. W. Beatty and W. Roche-Kelly on the 15th, 17th and 18th.

Windermere. — At THE N.A.C. SEAPLANE SCHOOL. — Instructors: Messrs. W. Rowland Ding, C. L. Pashley and J. Lankester Parker. Pupils with instr.: Flt. Lieut. Atherton (21), C. A. Barber (14), R. Buck (32), D. S. C. Macaskie (18), F. H. M. Macintyre (5), H. P. Reid (18), J. F. Ridgway (43), S. J. Sibley (11), H. Slingsby (14). Extra practice, Mr. J. Lankester Parker (34). 8's and circs.: Messrs. S. J. Sibley on N.A.C. pusher biplane and R. Buck on Avro. Machines: N.A.C. propeller biplane, dual control Avro.

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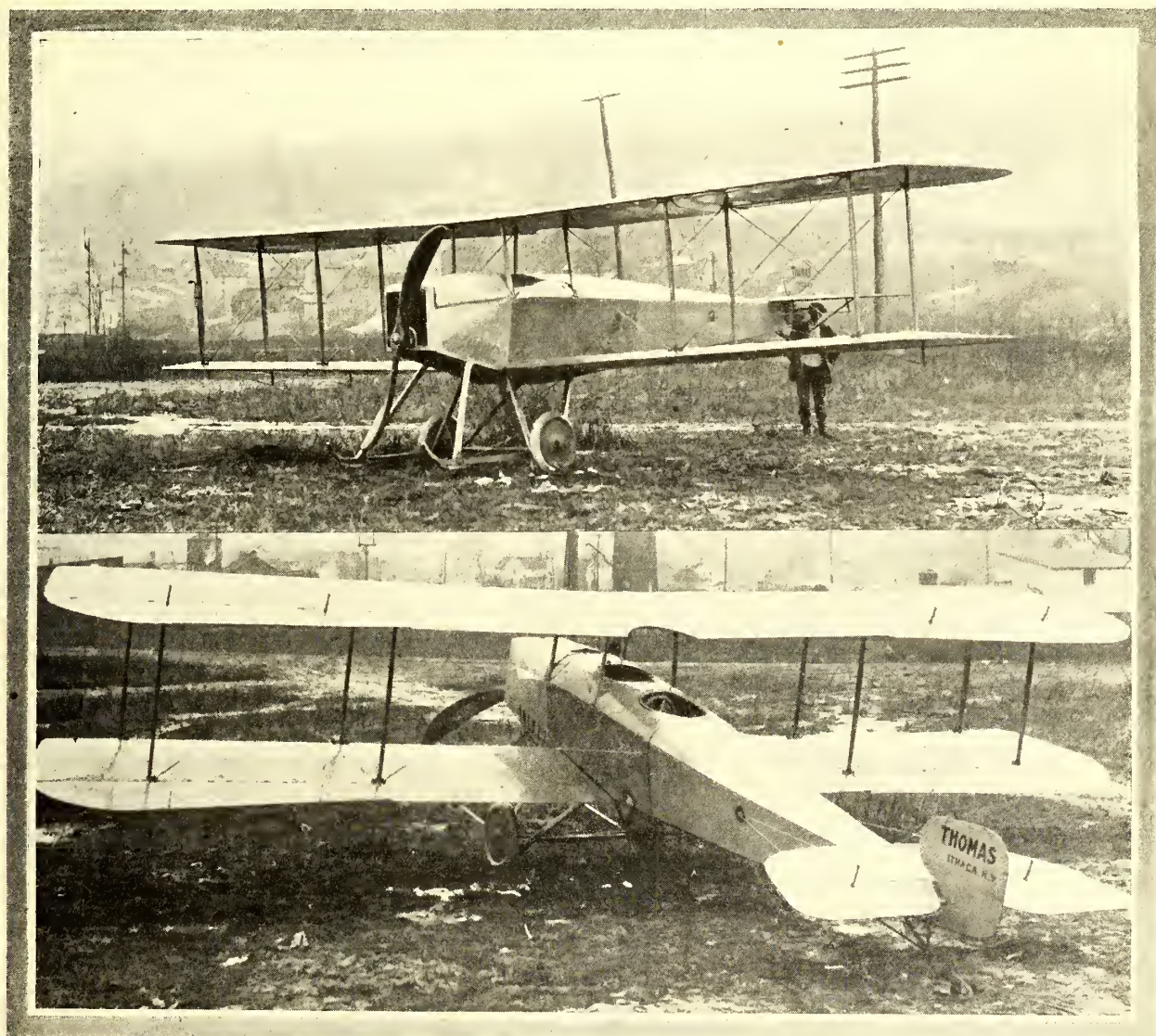
*Edited by C. G. GREY. ("Aero-Amateur")*



VOL. VIII. [REGISTERED AT THE G.P.O. AS A NEWSPAPER.] WEDNESDAY, APRIL 28, 1915.

No. 17

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## Hors D'Œuvres Variés.

The other day I met a young flying officer of my acquaintance sauntering along as if there had never been a war, and apparently less concerned with the Imperial Crisis than anyone speaking the English, or even the American, language. I knew he had been to France and had done good work, and he did not look ill, so I asked him what the—and so forth—he was doing in England. His reply, in the best Parisian French of the Café Valerie, was—"Speaking in the vernacular of our esteemed Allies—*Je suis hors d'œuvre.*" After a moment of intense thought, I came to the conclusion that he meant that he was out of work. Also, he explained that he was home on sick leave owing to something in the way of a strained muscle, and was going out again in a few days.

His delightful literal translation of a common phrase suggests that a number of people really do not know just why "hors d'œuvres" are so called. The best authorities agree that it is because the bilious mixtures of chopped roots, the oil-embalmed fishes, and such-like small game are outside the serious "work" of the dinner itself, speaking of the chef's efforts as a work, as one calls a book or a picture a work, or labels a piece of music an "op."—even though it may be a "glide."

Hence the title of this article. It is altogether outside the serious work of aviation, it will not satisfy anyone's hunger for information, no section of it has anything particular to do with any of the others, it has no definite reason for its existence, and if any readers can find any subtle purpose in it they are cleverer than I imagine them to be, and certainly cleverer than I am. If there is bitterness here and there, that is the olives, and if there is a sting in spots, that is the peppercorns in the sardines. For two consecutive weeks I have bored my readers with serious articles, and as the only readers who really matter have plenty of serious affairs of their own to worry them when at work they may be glad of something purely frivolous. One squadron knoweth not what another squadron doeth, so the various little incidents which may be old to some readers are probably new to others.

### An Aged Aeroplane.

Some of the new recruits to aviation are a trifle hazy on the subject of aeronautical history, hence the following. One of the older aeroplanes was under repair the other day, and some men were at work cleaning up various parts ready for them to be reassembled. One man, after removing a large fraction of an inch of castor oil and dirt from a strut, came across the figures 1902 stamped on it: these representing, presumably, the drawing office number of that particular part. One of his seniors, happening along shortly afterwards, asked casually, "Well, what sort of order is she in?" To which the mechanic replied, affably, "Poor, sir! Very poor. But there, what can you expect, with the struts in the wings thirteen years old?"

The man's reply gives one some idea of the average Englishman's notion of the rapidity of the growth of aviation, and he might have been surprised if anyone had told him that even Wilbur Wright made his first serious flight in 1908.

### Some Explosion.

One of the new young officers of the Naval Airship

Section caused quite a wave of anxiety at his station the other evening. The preliminary training of the airship officer includes a certain number of trips in ordinary free balloons, so that he may learn the elements of controlling the gas-bag portion of his airship, apart from the machinery, and, by way of a pass-examination, he has to make one trip all by himself; a weary and lonesome experience, I am told. At the end of this trip he has to report his whereabouts by wire, and get his balloon home as best he can.

This particular officer duly landed and wired back late at night, "Landed little burst, everything all right." Horrid visions arose before his commanding officer of a euphemistic youth packing up the tattered remnants of a once perfectly good balloon, and dire retribution was sworn against him for wrecking a valuable instrument of instruction. Then someone with an extensive geographical knowledge recollected that there is a village named Little Burst in the wilds of Essex, and suggested that the wire might have been mis-transmitted in the slipshod manner of the present-day telegraph operator; which ultimately turned out to be true.

In future, young officers might do well to print the names of their alighting places for the benefit of rural telegraphists who are unaccustomed to the high-class caligraphy learned at public schools.

### The Trials of the Peaceful.

Apropos young officers, most of them seem to be devoid of nerves to an extent which causes acute uneasiness to some of the older officers who act as instructors. To the middle-aged a balloon voyage is a period of calm, free from the noise and disturbance of the lower world, and mete for contemplation on all things from the state of one's own soul down to the state of mind of a Cabinet Minister who states that armament supplies are not being hampered by befuddled workmen.

To such introspective and extraspective beings a voyage with half a dozen pupils is a novel and exciting experience, the unwonted riot in cloudland, and the anxiety lest in the exuberance of personal argument they should fall overboard being calculated to produce a state of nervous prostration in the instructor who has been accustomed to regard ballooning as the most perfect of rest cures.

### Home-Made Huns!

Apparently, some of the same exuberance extends to the Service flying schools, at any rate so far as the younger probationer-pilots are concerned, for of late one finds the pupils are no longer referred to as "pups" but as "Huns." Whether the word is merely a corruption and contraction of "young 'uns," or whether it is a reference to their behaviour in the Mess, I am not in a position to say, but it seems quite a recognised term. It sounds quite curious to hear an instructor, after decanting one pupil, turn to the group awaiting their turns, and sing out, "Now then! Next Hun!! Look sharp!"

I wonder whether our friends the enemy would take it as a compliment or not? At any rate, some of the home-made Huns themselves do not appreciate their treatment at the hands of military instructors, for one



or two quite good fliers, whom I happen to know personally, have been turned down as unfit to become Service aviators on account of bad flying, when their performances have been spoilt simply by nervousness due to the way in which they were cursed and bullied by instructors. The "nerves" which make a boy fly badly when he is being criticised by the man who can make or mar his Service career are quite different from those which make him good or bad on active service, and we have lost some very good pilots in this way.

On the other hand, some astonishing people have managed to get themselves "confirmed" in both Services, Heaven knows how. It seems such a pity that really decent chaps should be turned out of the Services by instructors who are fools of one kind, and the most appalling outsiders let in by instructors who are fools of another kind. As already suggested in the past, the officers commanding schools, and the instructors detailed to work under them, need more careful selection than anyone else in the Services, yet it really seems that less trouble is taken about such selections than any others.

An instructor needs to be patient and tactful, and yet a firm disciplinarian. An impatient bully, however good a flier he may be, is the worst possible instructor or examiner.

#### A Quaint Description.

Some people who are quite good in their proper place in life get pitchforked into the wrong place on occasion. Such apparently was the case of an officer quaintly described by a friendly manufacturer of war material of non-British origin. The officer in question was concerned—perhaps is still concerned, if he has not been discovered—in supposedly hastening deliveries of certain essential parts of aircraft which are made abroad, and in smoothing their passage from the workshop to the aircraft maker. Being a popular and engaging person in certain sorts of Society he apparently found more joy in testing fast cars for friends, and in dining out, than in tramping through factories and in learning to talk the mere commercial part of a language whose after-dark vocabulary is more familiar to him.

As a result, his popularity did not extend to the manufacturers with whom he had to deal, with the result that certain material earmarked for us is currently reported to have somehow found its way into cases addressed to various esteemed Allies, who, no doubt, want it equally badly and pay for it at least as handsomely.

However, one of his visits of "inspection" produced from a local manufacturer the following descriptive question:—"Oo is it that 'ee is, this Capitaine X? 'Ee come to my usine in a voiture 'type course': 'ee walk into my bureau: 'ee whistle a 'rag-time,' 'ee dance three steps of the 'tango,' and 'ee go out, and it is impossible that one can tell what it is that for which 'ee has come. Why is 'ee?"

There are quite a lot of people mis-doing important jobs, about each of whom one feels inclined to ask, "Why is he?" when one sees top-hole men wasted on purely trivial things; and when the war is over some awkward questions will be asked.

#### A Wild Afternoon.

Apropos nerves, a friend of mine had a letter some few weeks ago from a young friend of his who has the misfortune to be the guest of a neutral country for a period. In it he related some of his experiences, and, as an example of lack of nerves, it takes some beating. Among other things he describes how he was brought down while out on a bomb-dropping expedition. He arrived over his objective at something in the region of 8,000 feet, and proceeded to dive for his target. Unfortunately, he ran into a bursting shrapnel at about 6,000 feet, which, in his expressive phrase, "spoilt the contract," firstly, by knocking his goggles off; secondly, by turning his vertical dive into something

super-vertical, so that loose things in the cock-pit fell overboard; and, thirdly, by cutting a couple of ignition wires, smashing two sparking plugs and a valve, which "did in" a cylinder and piston, and cut a water connection. A second hit smashed the bomb-fixing and scattered on the floor such bombs as he had not dropped.

Then the Bosches lost his range, and did not get it again till he had come down a further 1,000 feet or more, and had dropped all his bombs but one. After that a bullet scratched his cheek, and others cut two "load-wires" and a cross-bracing wire, so he dropped his last bomb and made off for the open sea, still, apparently, keeping his remaining cylinders running to prolong his glide.

#### No Serious Damage.

By then one wing was wobbling badly, but, thanks to strong spars, it held up all right to a fairly slow glide. When he got down onto the water he found the boat leaking through sundry bullet holes, which he proceeded to plug with bits of handkerchief. He then threw his anchor overboard, but it failed to find a hold, so the machine drifted down wind, and, finally, came to anchor in neutral waters, where he was duly picked up.

He tried to get the engine going again when he found himself drifting; but, owing to the broken valve, it caught fire, and he had to grope among splintered fragments of the passenger's seat for a fire-extinguisher, which, fortunately, operated successfully.

When the machine was brought ashore it was found that the engine was completely vanquished, but about the machine he wrote: "Except for the engine there is no serious damage. About four or five holes in the boat, and sixteen in the planes and propeller, and a few wires cut." That would be quite enough for the average man, but in war, as in peace, all things are judged by comparison.

One would like to reproduce much more of the original, for the diction is an excellent example of plain narrative, free from self-consciousness and without any seeking after effect, but there are things therein which it would be unfair to sender and recipient to publish. Still, the extract shows the kind of stuff of which some of the latest joined are made. Which only increases the regret that any like them should be lost, either as casualties or through lack of understanding in the weeding-out process.

#### An Unsettled Subject.

Writing of neutral countries raises rather a nice question of international law which I commend to the attention of Dr. Speaight and other authorities on the subject.

If a belligerent warship, of whatever size from a picket-boat to a super-Dreadnought, is driven by stress of weather, or mechanical breakdown, to seek shelter in a neutral port, it is allowed to stay there for a sufficient time to allow of its being put into a seaworthy state. Also it is allowed to take in sufficient fuel and supplies to carry it to the nearest port belonging to its own country.

Apparently, the same rule applies if it has been damaged in a fight, so long as it does not put into neutral waters simply to avoid being captured or sunk.

Even if it is being pursued it can claim sanctuary in neutral waters, but after a certain period it must either put out to sea or submit to being interned.

Now, why should not, or why does not, a similar rule apply to air-craft? If an engine stops on a machine on the continent through sheer cussedness, so that an aviator is compelled to descend, and if he finds himself within gliding distance of Holland or Switzerland, as an alternative to coming down behind the German lines, why should he not claim the same rights as a sailor, and be allowed 24 hours in which to put his engine in order, to buy enough petrol to take him home, and to clear off?

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German aircraft might be waiting beyond the frontier to cut him off on the way back, but that would not trouble most of our people, who would ask no better opportunity of going for the elusive Bosche.

#### When is a Seaplane Not a Seaplane?

A still knottier point is the ease of the seaplane. When does a seaplane cease to be an aeroplane and become a boat? Supposing Mr. Pemberton Billing's—I apologise, Flight-Lieut. P. B., R.N.'s—"Super-marines" had ever come to pass, and that one of them was damaged by gunfire so that it came down in the open sea. Supposing that there it shed its wings—as per catalogue—and taxied, or, rather, motored, as a motor-boat with an air propeller, into Flushing. It would obviously be entitled to treatment under International maritime law.

Supposing the engine was hit, and the pilot sailed in with a favouring wind, using a detached aileron or tail-plane as a sail, but without his wings. Presumably, he would still be entitled to maritime treatment.

Carrying the argument a step further, supposing a Short folding-wing machine has a wing or rudder damaged so that it cannot fly safely, comes down on the water, and "taxies" in with its wings folded. Is the pilot entitled to effect necessary repairs to taxi out to the three-mile limit, and then fly off, or may he fly off inside the three-mile limit?

The next point is, if that is allowed, supposing an engine is disabled, and the machine anchors outside the three-mile limit, if the pilot hauls up his anchor and deliberately drifts with a favouring wind into a neutral harbour, or neutral waters, who can dispute that he came in of his own accord, just as the late Admiral Von Spee went into Chilean harbours for repairs and supplies? If that applies to a sea-going vessel which sheds or folds its wings, why does it not apply to an ordinary seaplane or flying-boat?

Further, if the crew of a warship or a seaplane are picked up at sea by neutral craft—as has happened to

British and German seafarers—and are taken to a neutral port, they are sent home, they are not interned. Also, I believe, if a boat from a wrecked war vessel is driven by wind and weather to a neutral coast, the crew are entitled to treatment as shipwrecked mariners, and are allowed to depart in peace. If so, why should not a similar rule apply to seaplanes which alight in the open, and are driven by stress of weather into neutral waters?

Of course, the points as to land-going aeroplanes apply equally to British, French, and German aviators in Holland, and to French and German aviators in Switzerland, and as regards seaplanes they apply to British aviators in Holland and to German aviators and aeronauts in Denmark, so the argument is purely academic and free from national bias.

As regards the former, the chief argument seems to be as to whether an aviator is a navigator "within the meaning of the Act." It will be remembered that one young officer of the R.N.A.S., who was forced to descend after flying over Germany, was picked up by Dutch fishermen, taken to Holland, and sent home. If he had drifted ashore in Holland would his case have been any different?

Beyond this, one may argue—"When is a seaplane not a seaplane?—when it's a boat." And after that one may carry on with whether aircraft are "craft" or "vehicles," which involves the question of whether they are subject to the laws of war-vessels or gun-carriages. There is matter here for a pretty discussion these dull days.

As a snbjet for argument in camp or aboard ship this might become almost as productive of disagreement as the classic question of whether ham is pork or not, for there are so many side-issues which raise it above the regulation formula of the "Gun-Room Argument," which is laid down as consisting, like All Gaul, of three parts—(a) Unsupported Assertion, (b) Flat Contradiction, (c) Personal Abuse.—C. G. G.

#### A Trade Union and Armament Production.

Reference was made last week to the behaviour of the Cabinet-Makers' Union in calling out the men at a certain shop manufacturing essential parts of aeroplanes. It now appears that the firm, having urgent contracts to execute, reinstated the men with the exception of a few. These became the subject of an official inquiry. Naturally the agitators and the Union officials, not being themselves producers of anything useful, and having nothing else to do, spent the time before the inquiry coaching each other and assuring that the evidence of each man should corroborate the story of his mates.

The inquiry was held at three hours' notice, so far as the firm was concerned. The head of the firm, whose co-director was ill, and consequently absent, had no time in which to get up his case, having been told at 5 p.m. one day that an inquiry would be held at 10.30 a.m. the next day. The agitators had, of course, had ample time to prepare throughout the week.

When the inquiry was held the chairman was obviously unsympathetic to the manufacturer and appeared to set great store by the good opinion of the Union. The foreman of the firm, who had discharged the men, came in for severe handling, but even before he had given evidence it appeared that it was officially decided that he had been "indiscreet." Apparently he had, in pulling up the men for slackness, said: "You ought to be in the trenches!"

This foreman, an exceptionally faithful servant, and a splendid worker, realised that the contracts were exceedingly urgent, and frequently pulled up the men for slackness.—Incidentally, this terrible remark referring to trenches, bayonets, etc., etc., produced a demand to the firm from the Union secretary for an apology to be made to the poor, weak workmen who had been frightened like the babes of old by the "bogey man."

Evidence that the men had been slacking and had been agitating appeared to produce little effect on the officials in charge of the inquiry.

The firm proved that three of the men were not required owing to change of process in a certain sphere, but the main point that the three men were undesirable who had only been in the firm's employ for two weeks was ignored. The firm won on the point of change of process, but had to pay each of the three men a substantial sum. The other two men who were to be reinstated were regarded by the firm as agitators and trouble-makers.

According to this ruling any worthless person can take up work in a firm and unless kept on permanently at whatever terms he likes to make he can not only throw the whole factory out of gear, but can be assured of the sympathy of Government officials, whereas a conscientious servant comes in for a severe handling.

Unfortunately, it appears as if the Government are so afraid of the Trade Unions at the present moment that they (the Unions) are able to impose their own conditions wherever they please. It is almost enough to make one wish, as an officer at the front remarked in a letter recently, that the Germans could be allowed to invade this country just to give the agitators and skulkers generally a taste of what they are on the right road to cause by their disloyalty to their employers and their country, let alone to their "pals" who are giving their lives for them in the trenches.

There will certainly be a heavy reckoning when the troops come home.

#### To Certain Kind Readers.

Miss Adah Taylor desires to thank the numerous readers of THE AEROPLANE who have so kindly sent copies of the paper every week to her at Southport for distribution at the various Soldiers' Reading Rooms in that district, and to intimate to them that she is now leaving the district and will be unable to distribute the copies in future.

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## Naval and Military Aeronautics.

### GREAT BRITAIN.

From the "London Gazette," April 21st, 1915.

WAR OFFICE, APRIL 21ST.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flight Commander Lieut. R. P. Mills, R.F., from a flying officer, and to be temp. captain. April 10th.

Flying Officers—March 27th: Sec. Lieut. F. S. Barnwell, S.R.; Sec. Lieut. W. H. D. Acland, R. 1st Devon Yeo., T.F. April 1st: Capt. P. Babington, 9th Hants, T.F.; Temp. Lieut. J. G. Swart, R.A.

SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—To be sec. lieuts. (on prob.). March 30th: A. C. Wright, J. Gay. C. J. Chabot. April 1st. L. W. Learmount. April 2nd. W. J. B. Curtis. April 16th.

\* \* \*

From the "London Gazette," April 22nd, 1915.

WAR OFFICE, APRIL 22ND.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Assist. Equipment Officer—Sec. Lieut. H. T. Musker, S.R. March 11th.

\* \* \*

From the "London Gazette," April 23rd, 1915.

ADMIRALTY, APRIL 22ND.

ROYAL NAVAL AIR SERVICE.—Prob. flight sub-lieuts. confirmed in rank of flight sub-lieut.: S. E. Ritchie. October 24th. E. F. Moyes. November 12th.

WAR OFFICE, APRIL 23RD.

SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieut. Hon. E. A. Stonor to be lieut. March 16th.

\* \* \*

From the "London Gazette," April 24th, 1915.

WAR OFFICE, APRIL 24TH.

REGULAR FORCES.—ESTABLISHMENTS.

SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. lieuts. (on prob.) confirmed in rank: A. M. Cott, A. G. Clarke, T. E. Robertson, J. W. Griffiths, C. P. Ogden.

Lord H. R. H. Gascoigne-Cecil to be sec. lieut. (on prob.). April 5th.

\* \* \*

From the "London Gazette," April 26th, 1915.

WAR OFFICE, APRIL 26TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers.—March 26th. Lieut. E. J. Bannatyne, 19th Hussars, and seconded; Sec. Lieut. E. E. Hodgson, S.R.; Sec. Lieut. S. H. Long, Durham L.I., and seconded.

### NAVAL

The following appointments were notified at the Admiralty on April 22nd:—

ROYAL NAVAL AIR SERVICE.—Mr. H. Dobell, granted a temporary commission as lieut.-commander, R.N.V.R., and appointed to the "President," additional, for duty with Royal Naval Air Service, to date April 21st.

Mr. E. C. Hugh, granted a temporary commission as lieutenant, R.N.V.R., and appointed to the "President," additional, for duty with Royal Naval Air Service, to date April 21st.

\* \* \*

The following appointments were notified at the Admiralty on April 23rd:—

Staff Surgeon D. V. Lowndes, to the "Ark Royal," to date April 22nd.

ROYAL NAVAL AIR SERVICE.—Mr. F. P. Gardener granted a temporary commission as lieut. R.N.V.R., and appointed to the "President," additional, for inspectional duties in R.N. Air Service, to date April 22nd.

\* \* \*

The following appointments were notified at the Admiralty on April 24th:

ROYAL NAVAL AIR SERVICE.—Lieut.—Alfred W. Clemson transferred to Royal Naval Air Service as Acting Flight

Lieutenant and appointed to "President," additional, for Royal Naval Air Service, to date April 23rd, 1915.

Lewis Theodore Pennington entered as Probationary Flight Sub-Lieutenant and appointed to "President," additional, for Royal Naval Air Service, to date April 15th, 1915.

\* \* \*

The following appointments were notified at the Admiralty on April 26th:—

ROYAL NAVAL AIR SERVICE.—Flight Comm. E. T. R. Chambers granted the acting rank of squadron comm., to date April 17th.

Flight Comm. Military Wing, Royal Flying Corps, the Hon. C. M. P. Brabazon transferred to R.N. Air Service as squadron comm., and appointed to the "President," additional, for R.N. Air Service, to date April 19th.

The following have been granted temporary commissions as lieuts. R.N.V.R., and appointed to the "President," additional, for duty with the Royal Naval Air Service, to date as mentioned: J. E. A. Greatorex and S. Flower, April 22nd; L. C. Hope and C. H. Dolling, April 24th; A. H. Binyon, April 19th.

Messrs. J. E. Temple and O. G. C. Drury granted temporary commissions as lieuts. R.N.V.R., and appointed to the "President," additional, for inspectional duties with R.N. Air Service, to date April 25th.

The following have been granted temporary commissions as sub-lieuts. R.N.V.R., and appointed to the "President," additional, for duty with R.N. Air Service, to date as stated: J. F. Howson and W. C. C. Sykes, April 25th; C. L. Robinson and G. Hindle, April 19th.

Surg. T. Turner, R.N.V.R., to the "President," additional, for armoured car division, to date April 25th.

\* \* \*

According to the "Morning Post" it was reported in Dover late on April 26th that a German seaplane was in the Channel to the eastwards of Dover and had tried to bomb a trawler. A seaplane went out and returned after two hours. No details are to hand.

\* \* \*

It is announced from Rochester that on the return of an airship to the Naval Airship Sheds at Hoo, on Friday evening, one of the air mechanics, named William James Standford, who was assisting to handle her, was killed.

The ship ascended again and he was carried up hanging to a rope. On releasing his hold he fell from a height alleged to be 700 ft. His body was conveyed to the Royal Naval Hospital, Chatham.

This is the first accident of the kind which has occurred in this country, though a number of men have been killed in a similar way in Germany, and some in France.

A verdict of accidental death was returned at the inquest held on April 26th at Chatham. The evidence stated that owing to the wind on Friday afternoon, which was estimated at thirty miles an hour, the airship, which was being hauled down, broke away. The men released their hold of the trail rope, but Standford, seemingly thinking that the party would regain control, was carried up into the air about 500 ft. He held on to the rope for nearly ten minutes and then fell on to marsh land, being killed instantly. Flight-Lieut. James William Ogilvy Dalgleish, R.N., commanding the airship, said the man was about 50 ft. off the ground when he first saw that he was on the rope. He immediately let out gas to get down, but the airship had so much way on her that she continued to rise until the rope was off the ground. The airship was rolling about, which made it more difficult for Standford to hold on. She started to descend, and the witness hoped to land in time, but Standford dropped off.

\* \* \*

One records with great regret that on the evening of April 26th Flight Sub-Lieut. Stephen Medlicott, R.N., and Air-mechanic Henry Hughes were killed in a seaplane accident after making a flight from Calshot on Southampton Water. The bodies were removed to the Naval Hospital at Haslar. No particulars of the accident had been received at the time of going to press.

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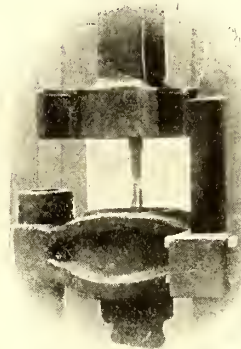
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**MILITARY.**

The Press Bureau issued on April 20th the following report from the Field-Marshal Commanding the British Forces in France.

Monday, April 19th.

1. The improvement in the weather since my last report has resulted in an increase in the activity of both our own and the enemy's air service. As usual, the advantage in the exchanges has been with us. In the Ypres district four hostile aeroplanes have been brought down in the last three days, two by us and two by the French. Yesterday one of our aviators engaged and drove off three hostile aeroplanes, completing subsequently the reconnaissance on which he was engaged.

\* \* \*

The Field-Marshal Commanding the British Forces in France reported as follows:—

April 22nd.

5. On April 19th one of our airmen carried out a very bold and successful single-handed attack on an airship shed near Ghent. He had to run the gauntlet of the fire directed from a captive balloon, as well as from the ground, in order to attack his objective. In spite of this he descended to within 200 feet and effected his object, causing a large explosion in the shed.

\* \* \*

The Field Marshal Commanding the British Forces in France reported as follows on April 23rd:—

4. This morning one of our aviators during the course of a reconnaissance, which he completed successfully, damaged a German aeroplane, and forced it to descend. Our Flying Corps also brought down another German machine about Messines.

\* \* \*

The Field-Marshal Commanding the British Forces in France reported as follows:—

April 26th.

One of our aviators bombed Courtrai Station this afternoon and destroyed the junction. Although wounded, he brought his machine safely back to our lines.

\* \* \*

The Field-Marshal Commanding the British Forces in France reported as follows on April 27th:—

4. In addition to the destruction of Courtrai Junction, mentioned in my communiqué last night, our airmen yesterday bombed successfully the stations and junctions at the following places: Tourcoing, Roubaix, Ingelmünster, Staden, Lange-marck, Thielt, and Roulers.

\* \* \*

The following passages in the descriptive account, which has been communicated to the Press Bureau by an Eye-Witness present with General Headquarters, continuing and supplementing the narrative published on the 16th inst., deal with aircraft:—

April 16th, 1915.

During the last three days no event of importance has occurred. On Monday, the 12th . . . our anti-aircraft guns damaged one of the enemy's aeroplanes, which retired hurriedly.

About midnight, on the night of the 12th-13th, an airship passed over one town, where it dropped fifteen bombs, some of considerable size. Three women and a child were killed and a few horses were injured. It afterwards flew north-west and dropped more bombs without effecting any damage.

On the 13th, the enemy's aeroplanes were more active, especially east of Ypres, throwing flares and smoke balls over our trenches, which were then subjected to a heavy bombardment by guns and rifle-grenades.

[It will be noted that it took three days for the Censor to be convinced that the official Eye-Witness' dispatch was innocuous, for this, dated April 16th, appeared on the same day as Sir John French's dated April 16th.—Ed.]

\* \* \*

The following passages in the descriptive account, communicated by an Eye-Witness present with General Head-

quarters, continuing the narrative published on the 20th inst., refers to aircraft:—

April 20th, 1915.

On the . . . 17th . . . near Ypres . . . a German aeroplane was brought down in our lines by our aviators. The pilot was killed and the observer captured.

During the day (April 18th) a German aeroplane was damaged in a fight with a British plane, and forced to descend. It managed, however, to reach its own lines.

\* \* \*

The following passage in the descriptive account, communicated by an Eye-Witness present with General Headquarters, continuing and supplementing the narrative published on the 22nd instant, deals with aircraft:—

April 23rd, 1915.

The chief event of interest which has occurred elsewhere on our front is the aerial raid made on the 19th against the German airship shed near Ghent. As stated, it was carried out by an officer acting single-handed. Carrying three heavy bombs besides hand-grenades, he arrived near his objective about 5 p.m., and found that a captive balloon was anchored on guard. It was a calm evening, which enabled him to manoeuvre, and as he was reconnoitring the position he threw one bomb at the airshed clearly visible below from a height of some 6,000 feet.

Then, on discovering that he was being fired at from the car of the balloon, as well as from the ground, he flew over the balloon, and descending in a spiral directly above it so that its occupants could not shoot at him, he threw his second bomb at it. This missed its target but exploded below, probably doing a certain amount of damage, as by this time the whole neighbourhood of the aerodrome was alive with soldiers running about and shooting.

Still planing down steeply as directly under the balloon as possible, so that its occupants could not conveniently shoot downwards and the troops below could not shoot upwards, for fear of hitting their friends in the car, and continuing to throw hand-grenades at the enemy balloon until he was below it, he descended to a height of some 200 feet before he dropped his last bomb onto the airship shed below.

He then flew back to his base untouched, though the planes of his machine were perforated with bullet holes. Beyond the fact that a heavy explosion was caused, it is not possible to say what damage was done to the enemy's shed.

[This appears to have been one of the cleverest performances of the war. One would not venture to say that it involved greater bravery than is displayed by every aviator who flies over gun-fire, but it distinctly shows mental ability of a high order, such as deserves a D.S.O. rather than a Military Cross—on the assumption that brains are necessary to win a D.S.O., whereas a Military Cross, like a V.C., may be won by sheer unthinking courage.—Ed.]

\* \* \*

The obituary columns of April 21st contained the following:—

**BROWNRIGG.**—Killed in action at Shaiba, Persian Gulf, on April 14th, Lieut. John Huleatt Brownrigg, the Norfolk Regiment, elder son of the late Lieut.-Colonel H. J. W. Brownrigg, R.E., and the late Mrs. Brownrigg, and grandson of the late T. M. Brownrigg, Esq., of Artington House, Guildford, aged nearly twenty-one years.

The Casualty List of the same date contained the following:—  
The subjoined casualty is reported from the Persian Gulf:—

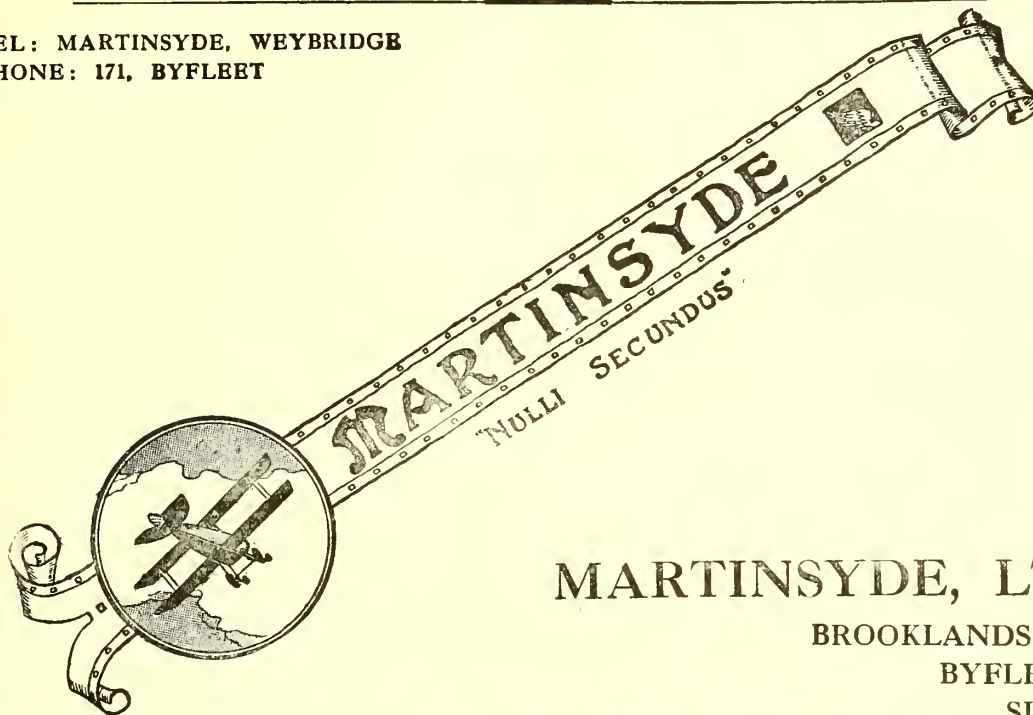
**KILLED.**

Brownrigg, Lieut. J. H., Norfolk Regiment.

John Huleatt Brownrigg will be remembered by many of the younger generation of officers as one of the keenest supporters of aviation at Sandhurst during the years 1912-1913, when the Army was just beginning to take flying seriously, and his enthusiasm must have infected many others of his period. It was always his intention to join the R.F.C., but he recognised the wisdom of being a soldier first and an aviator afterwards, so he devoted himself seriously to his regimental duties while keeping in close touch with flying. He joined the 2nd Norfolks in India, supernumerary to the establishment, early in 1914, and with it went to the Persian Gulf when Turkey declared war. A youngster with a far-seeing mind, thoughtful beyond his

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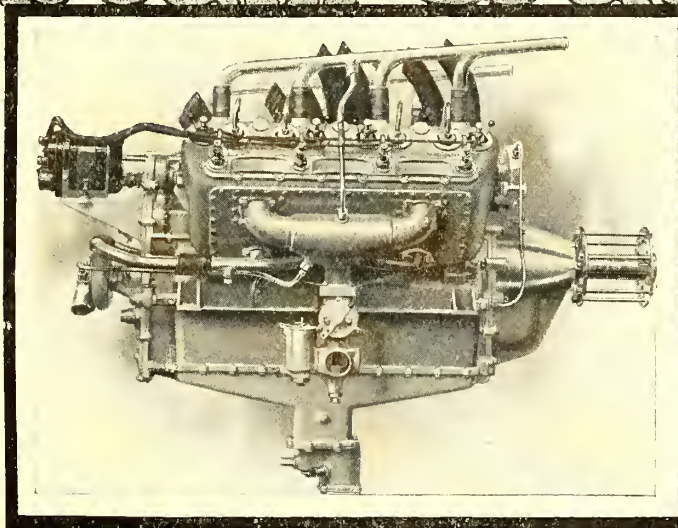
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years, yet cheerful and humorous under all conditions, he was of a type which can ill be spared in these days.

\* \* \*

The following casualty in the Indian Army was officially reported on April 24th :—

OFFICER DIED OF INJURIES RECEIVED IN AN AEROPLANE ACCIDENT :—

Clarke, Lieut. B. L., 23rd Cavalry, attached Royal Flying Corps.

No particulars as to the nature of the accident are available at the moment.

\* \* \*

Among the names of the 39 British officers in Germany who are reported by the American Ambassador as having been placed under arrest as a reprisal for the treatment of German submarine crews in England appears that of Captain Robin Grey, Royal Flying Corps.

It may have been noticed that all the officers belong to regiments bearing distinguished titles: Guards, "Royal," Scottish, Irish, and crack cavalry regiments composing the whole list, with the exception of three Middlesex officers and one Gunner, so evidently a careful selection has been made. The R.F.C. and the Middlesex may therefore perhaps regard their inclusion in the list as something in the nature of a compliment.

Doubtless Captain Grey was selected from the R.F.C. officers owing to a belief prevalent in Germany that he is related to our Foreign Minister. Though in fact the relationship is somewhat remote, the idea of thus getting one back on Sir Edward Grey must afford considerable satisfaction to the German nation, so possibly the distinction of thus being a vicarious victim will console the R.F.C. officer for the discomfort involved.

\* \* \*

A marriage has been arranged, and will shortly take place quietly, between Captain Philip Bennet Joubert de la Ferté, Royal Field Artillery and Royal Flying Corps, elder son of Colonel C. H. Joubert de la Ferté, I.M.S. (retired), and of Mrs. Joubert de la Ferté, of The Ferns, Weybridge, Surrey, and Marjorie Denison, younger daughter of the late Mr. Frederick Joseph Hall, of Sheffield, and Mrs. Hall, of Larchfield, St. George's Hill, Weybridge.

\* \* \*

A letter from an officer in France, published in the "Express" of the 24th, says :—

"Last night a Zeppelin came over us—not the first time by any means, as it has indulged in several absolutely abortive bomb-dropping jaunts to towns in our rear already.

"It seems a pity, from the German point of view, that such beautiful things should be of such little use, but at any rate they give me infinite pleasure to see. I suppose it must have been about 1 a.m. that we first heard it. The wonderful blue-black night became filled with a splendid sonorous drone as unchanging and continuous as the night itself. A Zeppelin is certainly a thing of the night. It suits the vast solitudes of the starlit sky to perfection.

"Although, as a rule, nothing short of an earthquake disturbs these veterans, they all stopped working to listen to it. We could just see it like an indigo pencil case high up in the air, and every now and then we would see little groups of diamond flashes among the clouds as our aeroplane guns loosed off at it in passing.

"The last time it went over it dropped a bomb in the back garden of a house where a somewhat lethargic colonel slept. He did not wake up, and only knew of it in the morning, when he found bits of the greenhouse in his bed!"

#### AT SEA.

It is reported from Copenhagen that recently the steamship "Uranus," of Lysekil, Norway, en route from England to Halmstad, when just off Lowestoft, met a Zeppelin, which threw a bomb without hitting her. The "Politiken" states that the Zeppelin followed the ship some distance, throwing a second bomb, which also failed to strike.

#### FRANCE

The afternoon communiqué of April 21st says :—

Belgian aviators have bombarded the arsenal at Bruges and the flying ground at Lissevegh.



A Parseval-Siegsfeld kite-balloon used in Tripoli by the Italians four years ago. This form of aircraft is only now being properly appreciated by the Allies.

The evening communiqué of April 21st says :—

Our aeroplanes bombarded (1) in the Woëvre the headquarters of Gen. von Strantz and a number of convoys; (2) in the Grand Duchy of Baden, at Lörrach, an electric station.

\* \* \*

According to a message from Paris, a Taube flew over Amiens on Thursday, April 22nd, and threw several bombs, injuring two persons. The raider fled when it was fired upon.

\* \* \*

It is reported that on April 24th a German aeroplane, taking advantage of the fog, succeeded in reaching the neighbourhood of Compiègne, and, mistaking the German outposts for French troops, dropped several bombs on them, inflicting much damage.

[Is it possible that the incident was, in rural parlance, "an accident done-a-purpose," as a quid pro quo for the numerous projectiles inflicted on the pilot in question by the German batteries?—Ed.]

\* \* \*

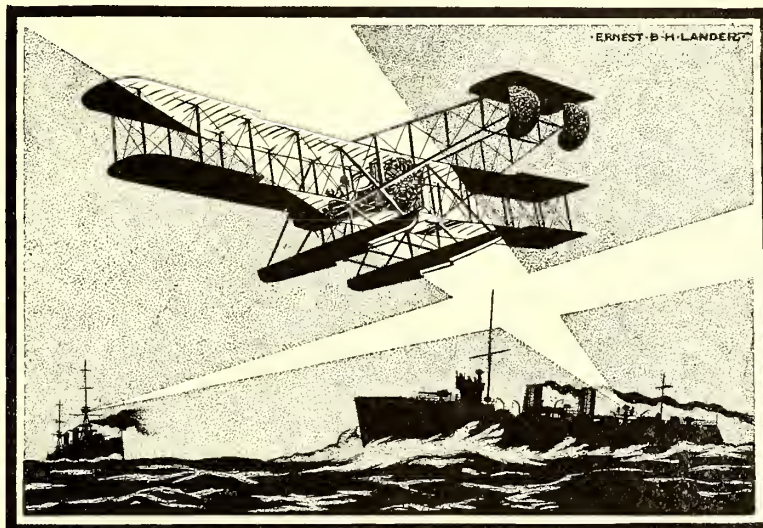
In the Paris "Journal," M. Georges Prade, who has a fairly intimate knowledge of aeronautical affairs, had recently an article based on a list of German aeronauts and aviators decorated with the Iron Cross, which provides some information. Up to March 15th four Zeppelins and one Parseval had been decorated with the Iron Cross, the decoration being also bestowed on the whole of their crews. Three of these airships, and perhaps four, have been destroyed.

The first, the "Z.IV.," before the war, created a sensation by landing near Lunéville. At Lunéville she had a crew of 12,



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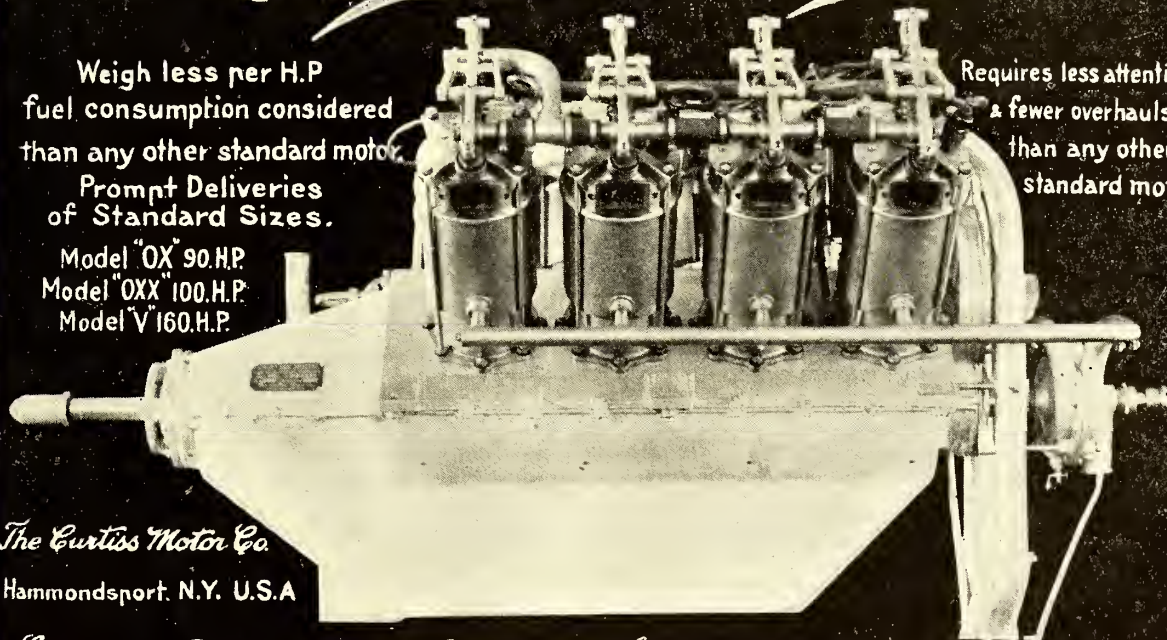
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but in the list of honours only 11 names are given—4 officers, 2 N.C.O.'s, and 5 men.

The second Zeppelin mentioned has no number—a fact which suggests that it has been lost. It is simply described as "the Zeppelin which appeared over Antwerp."

The other "Zeppelins" decorated are the naval airships "L.3," and "its sister ship" the "L.4," launched in September, 1914. The letter L, it will be remembered, designates the naval airship, and Z is reserved for the Army ships. The "L.3" and "L.4" were lost with forty or fifty men, off the coast of Denmark last February. [It is more than probable that the L.4 was not a Zeppelin at all, but a Schütte-Lanz. "L" stands for "Luftschiff," and may include any airship, just as the word "airship" does in our own Service. "Z," however, stands for Zeppelin in the military list, and can mean nothing else.—Ed.]

The non-rigid Parseval "P.IV.," which was captured by the Russians at Libau, also received the honour of the Iron Cross.

The dirigibles which carried out the first raid on England were not decorated; only four of their officers received the Iron Cross, First Lieutenants Hirsch and Baron Treutsch von Buttlar, of the Imperial Navy, commanding the naval airships "L.5" and "L.6" and two observation officers. From this it would appear that this raid was not the work of the "L.3" and "L.4," as was generally supposed.

M. Prade points out that it is noticeable that no decorations were accorded to the crew of the "Z.VIII.," destroyed by the French at Lunéville, nor to that of the airship captured by the Russians at Warsaw in December.

#### GERMANY.

The communiqué from the Great Army Headquarters issued on April 21st says:—

Yesterday morning a hostile aviator dropped bombs on Lörrach. A silk factory belonging to a Swiss was damaged, as were two houses, several civilians being injured.

As a measure of reprisal for the Russian air attack on Insterburg and Gumbinnen, which are open towns outside the war zone, we yesterday threw 150 bombs on the railway junction at Bielostok.

\* \* \*

The following news was officially circulated through German wireless stations from Berlin on April 20th.

Main Headquarters reports as follows: . . . During a reconnoitring flight made by a Turkish aviator over Tenedos some bombs were dropped on enemy ships. The aviator returned unhurt, although he was met by a heavy fire.

\* \* \*

The following was issued on April 21st for transmission through German wireless stations:—

German aviators have destroyed a shed in Belfort containing English aeroplanes, and six powder magazines.

\* \* \*

The German papers of April 21st and thereabouts publish long accounts of the air raid on Strassburg. The correspondents allege the damage to have been slight, but they admit that they were not permitted to enter the railway station, which was first hit. It is said that the raid settles the fable prevalent in Alsace that the French would specially spare Strassburg as "their future possession."

\* \* \*

The "Allenstein Zeitung" states that Russian aviators dropped bombs on Neidenburg, in East Prussia, early on April 23rd, causing some damage near the railway station.

\* \* \*

The Hamburg papers continue to show an interest in International Law regarding the bombardment of towns. In a long legal article the "Hamburger Nachrichten" claims that Hamburg is not a defended city, and that Cuxhaven does not make Hamburg into a fortress "like London," which has "guns placed on the roofs in preparation against an air attack." Hamburg, it will be remembered, though part of the German Empire, is nominally a "free town," and so keeps more or less free opinions.

Reuter's agent at Amsterdam reports that a Stuttgart telegram states that the Kaiser has conferred the Iron Cross of the First Class on Count Zeppelin.

[If one can believe all the news agency reports, Count von Zeppelin must have quite a collection of Iron Crosses. He won his first in 1870, and apparently several in this war.—Ed.]

\* \* \*

An "Exchange Special" at Copenhagen says that he is informed from Germany that Tondern, in Schleswig, will be made a permanent station for several Zeppelins. Two airship sheds were erected this winter, and a great double shed is now under erection.

\* \* \*

The "Daily Telegraph's" special correspondent at Zurich reports that on April 20th two French squadrons attacked the railway along the Rhine, bombarding successfully Müllheim and Habsheim stations and setting fire to immense forage stores at Mannheim. The aviators appeared over the neutral zone about 5 p.m., flying towards Wiesenthal. The squadron, which consisted of four fliers, headed north, and soon news came that they had dropped bombs over Habsheim. They must have reached Mannheim about dusk, as news was then received that the vast depots, containing fodder, were ablaze. They were burnt down completely during the night. The buildings destroyed were the agricultural exhibition halls of the Lanz Machine Works, which had been used for stabling 1,600 cattle from Alsace.

\* \* \*

Mr. Beaumont, of the "Daily Telegraph," at Basel, says that on the morning of April 21st two French aviators threw bombs over Lörrach, a small town close to the Swiss frontier. The batteries at Tullingen opened a heavy fire, but without success. One of the men dropped a bomb between the factory and the station, smashing a wall and injuring some people. Six other bombs followed, aimed evidently at the railway station. The first aviator then started up the Rhine, while the second continued circling over the town. He dropped three more bombs, one of which fell on the iron works, smashing the walls and windows.

Other French aviators appeared farther up the Rhine. One of them dropped a bomb on the railway from Strassburg to Basel, so damaging the tracks that traffic was interrupted. Another dropped bombs at Steinen, also damaging the railway. Other French aviators were also seen over Neuenburg, on the Rhine. The whole of the Rhine Valley, in fact, seemed to be swarming with French aviators.

Just as all the French aviators were returning safely the same night two Zeppelins from Friedrichshafen flew along the Swiss border towards the Vosges, but nothing more was heard of them. They did not dare to appear when the French aeroplanes came to challenge them.

#### RUSSIA.

The communiqué of April 21st says:—

A number of German aeroplanes appeared over Bielostok on April 20th and dropped about a hundred bombs, killing and wounding some of the civil population. No particular damage was done.

On the night of April 20th the town of Ciechanow was bombarded by a Zeppelin, but the bombs dropped did no damage. We have successfully bombarded Soldau Station.

\* \* \*

The communiqué from the headquarters of the Commander-in-Chief issued on April 25th says:—

Our Iliä Murametz aircraft on the morning of the 24th made a successful attack on the station of Neidenburg, where their bombs caused a number of fires and destroyed part of the railway line.

[This appears to indicate that the Sikorski biplane of the "Iliä Murametz" type has been adopted as a standard by the Russians.—Ed.]

\* \* \*

A semi-official statements issued in Petrograd on April 22nd says:—

"On April 19th at Ossowiec and in the direction of Lomja

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and Staviska a duel took place between the heavy Russian and German batteries. . . . Thanks to aeroplanes and the long range and rapid fire of our guns, we succeeded, frequently at a distance of twelve versts (eight miles) in inflicting grave losses on the enemy's reserves, which think they are in security. . . .

"Near Zambroff we brought down a German aeroplane, the two aviators being made prisoners.

"Raids by German aviators, which have become more frequent, cause almost no damage among our troops, but when their bombs fall in quarters of a town where there is a dense population, principally Jewish, as at Bielostok, then the raids cause much loss of life. Hitherto our aviators have confined themselves exclusively to the bombardment of military works and troops. However, in view of the Apachism of the enemy aviators towards the peaceful inhabitants of Gechanoff, Ostrolenko, Lomja, Bielostok, and other populated places they will be forced to begin reprisals."

\* \* \*

The precise meaning of the last paragraph is interpreted thus by the Petrograd correspondent of the "Morning Post":—

"While Russian aviators are employed solely against military structures, or such as have a military value, like bridges and railway stations, as well as war stores and the like, the German aeroplanes have been particularly busy dropping bombs, not upon places where any military purpose could be served, but upon crowded town districts, especially—as was the case recently at Bielostok—in the poorer quarters, where the sufferers were exclusively the most indigent class of Jews. Bomb dropping has recently taken place at over a dozen populous centres where no warlike purpose could be served.

"Since the Russians took to shooting at sight any aviators captured with incendiary leaflets there has been a great deal less billsticking on the part of the German aeroplanes. According to present practice I understand that bombs found in an aeroplane captured are only potentially fatal to the German aviator. He is generally able to save his life by parting with information. But no mercy is shown to those carrying incendiary leaflets."

[This touching solicitude for the welfare of Jews is a new and charmingly Christian trait in the Russian character which, however, seems to be counter-balanced by the reference to the shooting of hostile aviators. Why an incendiary leaflet should be considered a more reprehensible cargo than an incendiary bomb is not very clear, and the hint that even bomb-carriers are shot if they do not turn traitor is an unpleasant reminder that our esteemed Allies do not regard war entirely as an exercise in chivalry, as appears to be largely our habit and that of our French friends, and even of enemy aviators on the Western Front.—Ed.]

\* \* \*

It was reported from Petrograd on April 22nd that a German aeroplane had dropped three bombs on Warsaw. No damage was done.

#### **BELGIUM.**

The Belgian communiqué of April 24th says:—

Notwithstanding the very strong wind our aviators have been able to do some useful reconnaissances.

\* \* \*

It was stated in Amsterdam on April 23rd that reports from Eclos allege that on April 17th bombs were dropped on the Bruges arsenal near the harbour and on the market place. One civilian is reported to have been severely wounded. Other bombs fell between Zeebrugge and Lisseweghe, on a German aerodrome. On Monday, April 19th, the Allied aviators were again very active.

\* \* \*

The following paragraph from an account given by a Belgian doctor to the "Daily Mail" describes the experience of a railway guard who saw the lower end of the R.F.C. raid on Menin:—

"He was with his train at Menin when a British aviator bombed the railway there during the battle of Neuve Chapelle. He said that the Englishman came down so swiftly and at such a vertiginous angle that the German soldiers who had been shooting wildly at him thought he had been brought down.

They gathered in a thick cluster, looking upward, rejoicing in what they believed was a fine capture, when the aviator, swooping down, suddenly dropped four bombs in quick succession into the middle of the group and then swooped aloft again and away. It was all over in ten seconds, but the slaughter was frightful. 'It was terrible, doctor,' my informant said, covering his face with his hands. Seventeen German soldiers were killed outright."

#### **MONTENEGRO.**

A semi-official statement was issued at Cetinje on April 24th to the effect that an Austrian aeroplane dropped three bombs on Antivari on the 22nd and two on the 23rd, without effect. An Austrian aeroplane also approached Cetinje, but the local gunners forced it to return without dropping bombs.

#### **TURKEY.**

The "Daily News and Leader" learned from Athens on April 20th that Turkish aeroplanes which have arrived at Smyrna for use in the Dardanelles operations flew over the Allied Fleet anchored in the Gulf of Saros, and dropped bombs without doing any damage.

\* \* \*

It is reported from Mytilene that on April 22nd two German aeroplanes which threw bombs over Tenedos were hit by shrapnel and brought down. The fate of the aviators is unknown.

\* \* \*

The Salonika correspondent of the "Echo de Paris" telegraphs that, according to Greek papers, British and French aircraft have recently been active over Smyrna and the neighbourhood. The damage by French aviators recently is stated to be serious. Two bombs fell on Fort Kastro, at the harbour mouth, killing and wounding soldiers. One struck the railway station and another a German vessel anchored in the port, which, it is stated, was sunk.

The allied aviators discovered that the Turkish army at Smyrna numbers about 35,000, in two parts, one occupying trenches between Vourla and Smyrna, and dominating the town, and the other the rebuilt forts of the "Two Brothers" and Rastrati. A new fort above the farm of St. George appears to be armed with thirty heavy guns from Constantinople.

\* \* \*

The Athens correspondent of the "Journal," Paris, reported on the 25th that two Turkish aeroplanes, flying over Tenedos, were forced down, having been damaged by the Anglo-French Fleet. On the 23rd several French aeroplanes attacked with bombs a magazine at Maidos, on the European side in the Dardanelles, where there are forts.

#### **EGYPT.**

A British soldier in Egypt, writing on April 4th, says:—

"You will probably be interested in the doings of aircraft at the Canal, which were not altogether successful owing to two causes: (1) the extreme difficulty of detecting objects on the desert from a high altitude, (2) the observers were untrained men.

"As a fact, the delivery of the attack on the Canal defences came as a surprise. It was believed—a belief based on aeroplane reconnaissance—that the enemy were still four days' march away. We woke up one morning to find shells falling in Lake Timseh, and a pontoon bridge in course of construction.

"As a type of information received from the aircraft observers I can vouch for the following:—A body of Turkish cavalry was discerned at a village some distance from El Kantara. A composite force of Yeomanry and Indian Lancers was dispatched. After a weary march across the desert they arrived at the spot, where the alleged horses turned out to be a flock of goats! The enemy had never been there.

"That shows the difficulty of seeing things in the desert from a height of 3,000 to 4,000 feet. The aviators took no chances, for if they had come down in the desert they would never have got up again."

#### **CANADA.**

The "Times" reports that the Canadian Department of the Naval Service has arranged with the British Admiralty for the training in Canada of candidates for the Royal Naval

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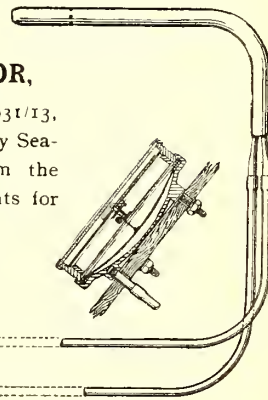
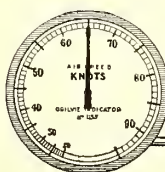


## The BRITISH WRIGHT Co., Ltd.

In view of the arrangement made between the Treasury and the British Wright Co., Ltd., in respect to the free use by the Navy and the Army of the British Wright Patents, the Directors of the Company beg to notify all British Manufacturers that machines embodying the constructions so patented, may be freely manufactured in pursuance of such Government orders. The Company is prepared to receive applications from British Manufacturers for licences to manufacture under the Wright Patents in respect to machines for private use in Great Britain or for export to Foreign Governments.

### THE OGILVIE AIR SPEED INDICATOR,

Patents No. 13796/13 and No. 27931/13,  
now so largely used on the Navy Sea-  
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Air Service. The flying school, which is being established near Toronto, will be in charge of Mr. J. A. D. McCurdy, the Canadian aviator.

The "Times" correspondent at Ottawa wired on April 21st: "The Naval Department is being fairly inundated with inquiries from Canadians replying to the call for aviators for the Royal Aerial Service. Mr. McCurdy was in conference with the authorities at Ottawa to-day, when arrangements were completed for starting the training of prospective recruits."

The choice is a wholly excellent one. Little has been heard of Mr. McCurdy of late years, for he never lowered himself to the status of an aerial acrobat or a country-fair mountebank. It will therefore surprise most people to learn that during the winter of 1908-1909, before anyone had flown any considerable distance in Europe, Mr. McCurdy and an American, Mr. Baldwin, flew over 1,000 miles in Nova Scotia on a biplane of a type evolved by them in collaboration with Mr. Glenn Curtiss. This machine started from and landed on the ice of a frozen harbour.

Since then Mr. McCurdy has been further associated with Mr. Curtiss, and on one occasion flew from Florida to Cuba on a Curtiss boat. As one of the great unadvertised pioneers of aviation, Mr. McCurdy, in the British Empire, deserves to rank with Messrs. Grace, Ogilvie, McClean, and Cockburn, all of whom are now serving the King, though Mr. McCurdy ante-dates all of them as a flier.

#### WEST INDIES.

The "West India Committee Circular," dated April 20th, says:—"Through the courtesy of the Army Council we are able to publish in the current Circular an illustration of an aeroplane presented by the people of Dominica to the Royal Flying Corps. It will be recalled that Mr. Harcourt, on learning that the Legislative Council wished to pass a vote of £4,000 to his Majesty's Government for expenses in connection with the war, cabled over to the Council suggesting that any contributions should be made to the Prince of Wales' Fund. The Legislative Council persisted in their desire to present the money for some war purpose, and Mr. Harcourt consented. At the suggestion of the Admiralty, the contribution was then divided between the naval and military wings of the Royal Flying Corps. The aeroplane, which, it will be noted, is armed with a quick-firing gun, is a 100-h.p. Vickers biplane, and carries a gunlayer as well as a pilot."

#### The R.N.A.S. Comforts Fund.

The following cash contributions have been received:—Miss Shakespeare, 10s.; Miss E. Britt (2nd contr.), 10s.; Vickers Ltd. (Aeroplane Woodworkers' 19th contr.), 6s.; Miss Bradshaw, 5s.; Mr. S. Benda, 1s.; total for week, £1 12s. total to date, £926 os. 7d.

Another consignment of comforts has been sent to the new seaplane-carrier.

Further contributions in cash and kind should be addressed to Mrs. Sueter, The Howe, Watlington, Oxon.

#### The Invasion of England.

Various rumours have it that between the hours of 3.30 a.m. and 4 p.m. on April 23rd certain Zeppelins, in numbers one to four, were seen over and in the neighbourhood of Blyth, Northumberland. It is not unlikely that British patrol aeroplanes were mistaken for alien airships. And, anyhow, airships are constantly at work all over the North Sea.

#### A Good Example.

Many communities of men have responded nobly to their country's call in the present crisis, but few can have given themselves wholesale in the same degree as the Shoreham Flying School, which dissolved itself for the purpose, the whole of the staff and the pupils for the time being joining one or other of the Flying Services. Messrs. Elliott, England, Masket, Sholto Douglas, Hayland-Wilson, and Thompson are all serving in the Royal Naval Air Service, and Messrs. Aikman and Lusted are in the Royal Flying Corps, most of them holding commissions.

#### The Death of Major Kennedy, R.E.

The death is announced, at Rugby, of Major John Nassau Chambers Kennedy. He was born in Canada in September, 1864, and received his first commission in July, 1886. He retired from the Royal Engineers in May, 1910, with the rank of major, passing into the Reserve of Officers.

During the South African War he was on the Staff, and was present at the relief of Ladysmith and many other operations. He was mentioned in dispatches and had the Queen's medal with six clasps.

The funeral took place at the Military Cemetery, Aldershot, on April 23rd.

Major Kennedy was an enthusiastic supporter of aviation in its early days. He was a member of the Committee of the since defunct Aeroplane Club, which, in its short life, certainly helped to stimulate the movements of more conservative Lodies.

During the early aviation meetings of 1909-1910 at Doncaster, Wolverhampton, Bournemouth, and Lanark, Major Kennedy was an indefatigable worker, and his knowledge and skill as an engineer were of the highest value. He was especially useful in calculating altitudes, in the days before barograph records were accepted.

In 1911 he left London to take charge of the electric signalling arrangements of the L. and N.W. Railway, and invented many valuable devices in this department.

When war broke out he joined at Aldershot and undertook the work of organising the telephone systems of the immense new camps, which work he carried out with conspicuous success.

His death at the early age of 50 is deeply to be regretted, for in him the King has lost a valuable, loyal, and self-sacrificing servant, and many of us to whom he had endeared himself by his personal charm of manner and his quiet but keen humour have lost a highly valued friend.

#### The Alleged Aviator.

The following note by one who knows him may assist those who come in contact with the subject of a recent article from the U.S.A. :—

The exploits of the famous, or infamous, "Captain" E. L. Janney are thrilling enough to make good copy for a short story. Anyone who could be more ignorant than this Janney on aviation matters would be ignorance itself. I have met him.

He introduced himself to me at Shoreham—a very undignified procedure for a "Captain," as, be it remembered, I am a person of no importance. The "New York Tribune" describes him as a ruddy-cheeked young man. I should describe his cheek a little more vulgarly. (I have knocked about 'dromes for many years.) He talks "Yank" more or less successfully, and is an adept at pulling legs. He pulled mine (I am an Englishman), for he asked me to join his Canadian Flying Corps. There was nothing in that, but—he asked me for £30 as a deposit for my uniform. There *was* something in that, but before the business was finally settled he had suddenly disappeared.

Not, however, before he pulled the legs of others, and packed an aeroplane, and took its measurements, and had a crate made, and nearly sent many of us crazy with "I guess that's good 'nough for me," and—oh! and dozens of other things. Yes! he did fly—as passenger in a box-kite. What a sight it was! A beautiful, brand new uniform with "Royal Flying Corps" written on it, a body inside it—"Captain" E. L. Janney.

It was a purely unpaid-for joy-ride—a flight obtained under false pretences. If the machine suited him he would buy it on behalf of the Canadian authorities! I am sure the Canadian authorities would appreciate his ability in purchasing a two-year-old box-kite for war service.

There are many other little stories I could mention about "Captain" Janney, but if he wants them in print he must see the advertisement manager, as your paper is not published for the benefit of alleged aviators like the "Captain."—SINRO.

## The Thomas Military Tractor.

It was noted some months ago that the Thomas Bros. Aeroplane Co. had transferred its works from Bath to Ithaca, N.Y., during the early part of the year, and one is glad to hear that it now enjoys the advantages of a larger factory and a steadily increasing business.

The flying-grounds at the Thomas School are especially adapted to both land and water flying, having a clear stretch of 40 miles of water and amply large grounds adjoining the water front.

The company is now marketing a military two-seater tractor biplane which is on a par with European machines of this type. The design, construction, and workmanship are first class throughout. The tests recently carried out go to prove that this tractor is one of the most efficient machines of its kind in America.

The results of the tests are as follows:—

### U.S. Army Requirements. Result of Tests.

Speed .....	70 m.p.h.	81.1 m.p.h.
Slow speed .....	40 m.p.h.	38 m.p.h.
Useful load carried .....	750 lbs.	800 lbs.
Propeller efficiency .....	70 per cent.	75 per cent.
Climb fully loaded .....	4,000 ft. in 10 mins.	4,000 ft. in 10 mins.
Ditto .....	—	800 ft. in 1st min.

Inherent stability—very stable.

Full load consisted of three men and four hours' fuel.

The overall dimensions are: Length, 26 ft.; span, 36 ft.; chord, 5 ft.; gap, 5 ft.; weight of machine empty, 1,075 lbs.; horse-power, 90 b.h.p.

The fuselage is built with white ash longerons and spruce struts, which are milled out for lightness where possible. The fuselage members are held in position by means of steel plates, which are bolted to the longerons so that the bolt-holes lie on the neutral axis of these members, thereby retaining their strength. The same principle of construction is adopted throughout the machine.

The front of the fuselage carries the radiator, behind which the motor is mounted on two ash engine bearers resting on two transverse members of the fuselage. Immediately behind the motor there is a panel carrying the service petrol-tank.

The observer's seat faces this, and is placed on top of the 20-gallon storage tank, which extends across the fuselage and is securely fastened to the top and bottom longerons.

The pilot's seat is behind this and faces a second panel equipped with the following instruments let in flush: petrol pressure-gauge, "Tel" revolution counter, inclinometer, clock, barograph, air-speed meter, switch, petrol shut-off cock, and spark advance lever.

The control is by means of wheel, vertical column, and

shoulder yoke, or foot-pedals. The wheel operates the rudder, the column the elevator, and the shoulder yoke or foot-pedals the four double-acting ailerons. These can be transposed to standard European control without delaying deliveries.

The rear portion of the fuselage tapers vertically and transversely to a vertical member which forms a part of the rudder column and rear skid strut, and is covered with doped linen fabric. The front portion is streamlined above by a folding aluminium hood, and on the sides and bottom by light-gauge sheet-metal covering. An exhaust manifold carries the gases to the underside of the fuselage away from the occupants.

The rudder, elevator, and stabilising planes are of steel construction.

The running gear consists of two 26-in. by 4-in. streamlined wheels carried on an axle hinged at its centre, and supported at this point by two tie-wires from the fuselage. A horizontal pin at this point holds it to two secondary cross-members attached to the skids. The load is supported by means of rubber cord attached to the skids and passing over the axles. The skids are attached to the fuselage by six ash members and steel plates; the bays between members are braced with flexible steel cable.

The wings are set at a slight dihedral angle and are built in right and left hand pairs. The central part of the upper plane consists of a small section carried by four short struts which sprout from the fuselage. The rear portion of this section is cut away for convenience. The wings are covered with a high-grade linen fabric.

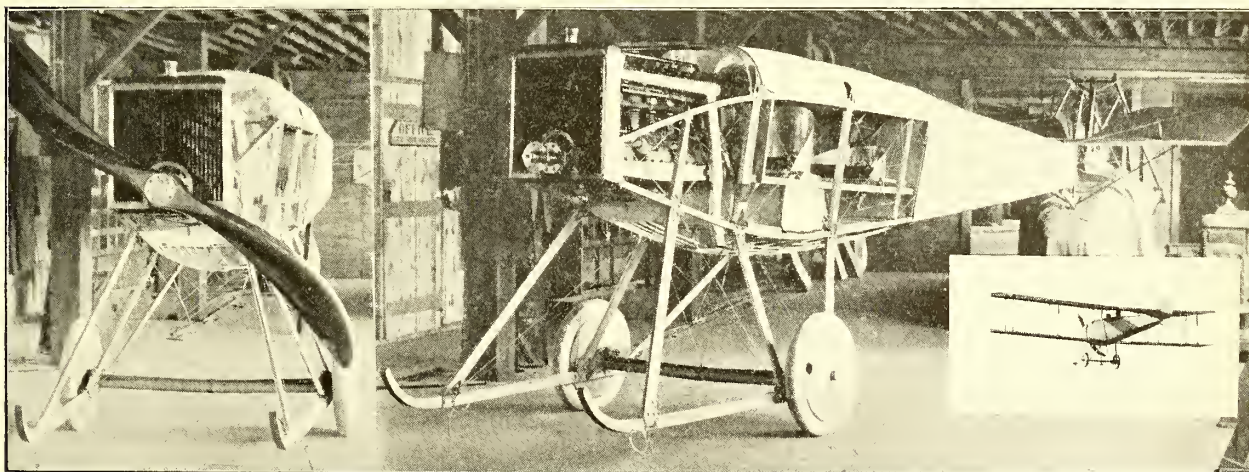
The wing spars are of silver spruce milled to an I-section, except at points where the strut joints are formed. The ribs are built up of a web and flange, and are as light as possible. At the strut joints the ribs are box-section. All internal woodwork is painted with a waterproof preparation. The bays in the wings are braced with solid steel wire.

The factor of safety throughout is not less than 7, and in many instances it is greatly in excess of this figure.

Special attention has been given to demountability and the accessibility of all vital parts, as well as to the design and finish of all detail work.

In flight this machine has proved highly satisfactory and possesses a high degree of inherent stability. The tests just referred to were made by a pilot with no previous experience of tractor flying, so that it is reasonable to expect even better results in the hands of an experienced pilot.

It will be remembered that the Thomas Brothers and their chief designer—another Mr. Thomas, late of the Sopwith Co.—are all British born, and so the machine can claim to be of British origin. One hopes, therefore, that the naval and military authorities controlling the Allied Flying Services will find the Thomas machine suitable for use by their aviators.



Details of the Thomas Tractor Biplane, showing the engine fixing and seating arrangements. On the right the machine is seen flying.



## Aero-motors: In Kind and Construction.—(Continued)

BY GEOFFREY DE HOLDEN-STONE.

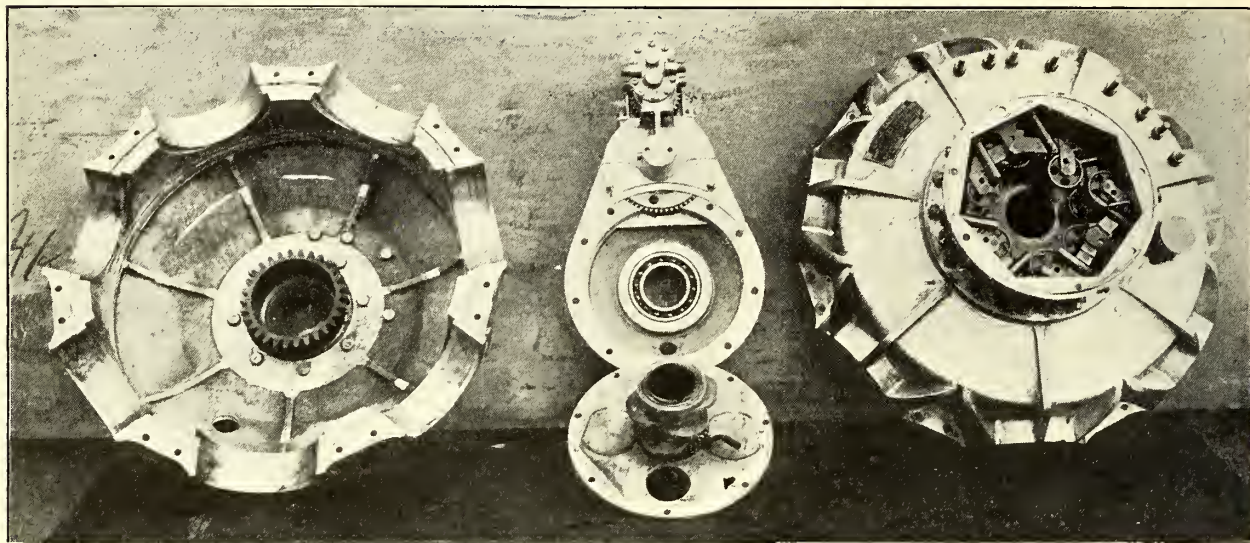


Fig. III., showing the Crank Case, Valve Gear, and Cams, etc., of the Salmson Engine.

"Eliminate the impossible," said the original hero of shilling shockers, Lecoq, "and whatever remains, must be the truth." Well, we have seen that the master grip is at least one of the impossibilities for a radial motor, so we must find an alternative. The whole scheme of it—dating back, we remember, to its foundation, the induction hoop—must not be spoilt midway by any base mechanical obstacle. It thus becomes essential that we balance the main rod connection for all seven or nine rods, by making all its parts identical, and making its mass free to revolve as well as rotate; that is, not rigid to any one rod. We can only do this by using a plain drum, flanged to contain the necessary ball bearings—with not so much as a mark on it to indicate a lead for any one cylinder or its contents—and make the connection with so many pins of exactly the same weight (reduced by hollowing) duly caged by those ball-bearings. This, as a fact, happens to be the plan adopted for the Salmson motor, as will be seen from Figs. III. and IV.

Now we can only counterbalance just the bare weight of the drum and its pins, and we have still definitely to counteract the possibility of reversing as well as to establish the direction of crank rotation and maintain it irreversibly.

But how? Years ago, one James Watt—a man of some engineering fame, though he probably knew less than your aero-service mechanic of a couple of years' experience is quite sure of—sought for a mechanical motion giving a positive crank action by different and patentable means. So he devised a train of free revolving and rotating gears, operating from a fixed one, sun-and-planet fashion. This more or less forgotten arrangement—or a modification thereof—is the one employed in the Salmson motor, in combination with the balanced crank, to achieve the desired result of a crank-lead that cannot reverse itself and is subject to a perpetual forward pull in the designed rotary direction. This incidentally is the leading feature of one of the Canton-Unné patents.

### The Mechanism of the Connecting Rod Gear.

Again how? Let me humbly assist the pictures to explain. Figure III.—which gives an inside view of the back-plate of the crank-chamber on the left—shows a stationary sun-gear from which the motion starts. The crank-shaft ball-bearing it normally encloses is, however, not shown. Still, Figure IV. shows at B<sub>1</sub> the position of this gear—though not the gear itself—in relation, first, to the short hinder end of the crank-shaft as supported by the aforesaid ball-bearing; and secondly, to the planetary gear with which it—the sun-gear

—meshes. Now this planetary B, it will be seen, is carried with its sister-gear A<sub>1</sub> in a ball-bearing collar contained in a bell-crank-arm, formed on the hinder one of the two balanced crank-webs. Nevertheless, we notice that the balance of parts is still maintained, because the weight of both planetaries and the bell-crank-arm is supported by the sun-gear, partly, and for the rest is counter-balanced by staggering the rear-crank weight out of line with its web, and at the same angle to that line as the crank-arm takes. Also both counter-weights take an equal share in balancing the weight of the connecting-rod drum—or pincarrier—and its contents; which, of course, balance each other.

### Why It Moves As It Does.

Now Fig. IV. shows a fourth gear, formed solid on the hinder flange of the connecting-rod drum. This meshes with the freely revolving and rotating planetary gear A<sub>1</sub>, which revolves and rotates as one with its sister-planetary B. So much, then, for all the parts concerned. But just here we must specially notice certain points about them. The first is that the stationary sun-gear and the gear on the connecting-rod or carrier-drum have each thirty teeth against twenty-five on the two planetaries. This establishes the fact that, irrespective of the direction of rotation or revolution, the planetaries must always revolve faster than they rotate. Secondly, that the carrier-drum gear is also stationary. And thirdly, that the designed rotation-direction happens to be clockwise. Fourthly, we see that the crank-pin centre, the crank-shaft axis, and the free end of the crank-arm that carries the planetaries represent the three angles of a triangle. Take any one of these points as the centre of a circle of revolution, the sides between it and the other two will become radii, and those other two—and anything they carry—will rotate around the first fixed point in the same direction as it revolves. Thus, the shaft-axis being the chosen fixed revolution-centre, it follows that the carrier drum-gear and the planetaries must rotate about it in the same clockwise direction; in the case of the planetary B, clockwise around the stationary sun-gear B<sub>1</sub>.

### How It Does Not Work: And Why.

Now, if the fixed sun-gear B<sub>1</sub>, instead of being stationary on the back-plate, were solid with the clockwise-revolving crank-shaft, it would naturally cause its meshing planetary to revolve anti-clockwise. And B, through A, would endeavour to make the carrier-drum gear A revolve clockwise. That would indeed give A and its rods a clockwise lead, for if B<sub>1</sub> had one more tooth than B or A<sub>1</sub>, let alone five, the multipli-



cation would wreck the whole contrivance. If, on the other hand, it had the same number of teeth as B and A1 the latter would do no work. The action would be ineffective, too, if the planetaries had the more teeth—because they would revolve slower than their rotation speed—even if A had fewer teeth to match the number on B1. And if A had one tooth fewer than B1, the multiplication trouble would again result. Whereas, nothing more than a positive irreversible lock—immediately following the first revolving movement of the crank-axis—is desired.

#### How It Does Work: The Gear-Lock Secret.

But as it is, the action of the stationary sun-gear B1 is purely negative as a driver. Consequently, it allows the planetary B to revolve as well as rotate clockwise; and only because the latter has fewer teeth, does it take up faster revolving than rotating motion. But A is likewise a stationary gear, equally inactive as a driven gear to revolve the carrier-drum. But having more teeth than A1 it is naturally slower, and cannot by any chance run back from the tendency of the latter to overrun it. This is the simple secret of the irreversible lock set up when once the crank-axis has begun to revolve. Yet A having the same number of teeth as B1, it can rotate no faster about the plane of B1 than B1 could if their positions were reversed. And being for the rest, as we have seen, only a complementary angle of the other angles formed by the axis of the planetaries and the crank-shaft axis, it shares the same rotation speed as the planetaries about the plane of B1. For, after all, it is only an enlargement of the crank-shaft axis, the fixed revolution point. Or to put the matter another way, this carrier drum-gear A represents the load for which the tooth radii of the planetaries B and A1 are the levers; their rotation on B1 affording the power.

In this way the full equivalent of a master-grip is obtained, and, simply enough, the problem of assuring both irreversibility and permanent one-way crank rotation without a master-grip, yet combining with perfect balance of parts in motion, both in effort and weight, has been finally solved in the Salmson radial motor. Nevertheless, there is nothing to prevent the crank-shaft being turned over by hand the opposite way, for any purpose; for just as definitely the planetaries establish their lead in the new direction.

#### The Result of Mechanical Balance.

The immediate result of this perfection of balance—one of the essential qualities for an efficient aeromotor—is to be seen in the practical absence of vibration at all speeds. This is shown notably in the earlier illustration of the 130-h.p. Salmson under test, in which the centre of the shaft is clearly visible. This camera-proof is the more valuable too, as the back-plate of the crank-chamber in this particular instance happened to be slightly flawed in the casting. This was only discovered too

late for replacement; nevertheless the motor ran through its entire test without increasing the crack in the least. However, any accident of the kind—or any chance injury, such as a shot—appears to be compensated for as far as possible by the system of ribbing the crank-chamber castings radially and alternately inside and outside; and carrying out this strengthening further by running short curved buttresses from each rib over the areas of possible stress between the cylinder-sockets.

#### But—

At the same time, since the Salmson is by no means the only radial motor in existence—its success alone having encouraged the creation of others of the type to supersede the rotary if possible—it follows that there are other systems of obtaining internal rotary and reciprocal balance as well as an irreversible thrust-lead. It remains to be discussed, therefore, how nearly these systems obtain equal results; or whether on the other hand, the Salmson results still remain the better, after taking into consideration the undoubted extra mass-weight of the crank-arm and planetary gearing. Personally, I regard this consideration as of such importance in aero design—in view of useful weight to be carried—that with anything like equal mechanical and general motor-efficiency, I should choose the lighter system.

#### The Distribution.

So far as the principal working parts and general system are concerned, there is no great difference between the Salmson distribution and that of most others, rotary as well as radial. That is to say, they take their drive from a gear solid with the crank-shaft, meshing with a planetary, the smaller complementary of which meshes back to a final driven gear which, with its cam-sleeve, is freely mounted on the shaft behind the first one.

The only difference—remembering that from this front-end view the shaft revolves anti-clockwise—is that the planetaries merely revolve clockwise—but being otherwise stationary, do not rotate—and consequently cause the last gear and its cam-sleeve to revolve anti-clockwise—or the same way as the crank-shaft from any view—at an adequately reduced speed. In a typical rotary on the contrary, in which the planetaries both revolve and rotate in the same direction as the motor's motion, the cam-sleeve gear is consequently driven round the opposite way. The point, however, is quite academic; only of importance in deciding the design, shaping and general run of the cams, but hardly of any other assistance, except perhaps in putting the valve-gear together after complete dissembly.

#### And the Valve-Gear.

For the rest, as will be seen, the planetaries are duly mounted in ball-races and set in a kind of bulkhead plate that separates the hexagonal drum—in which the cams and jumping-pieces

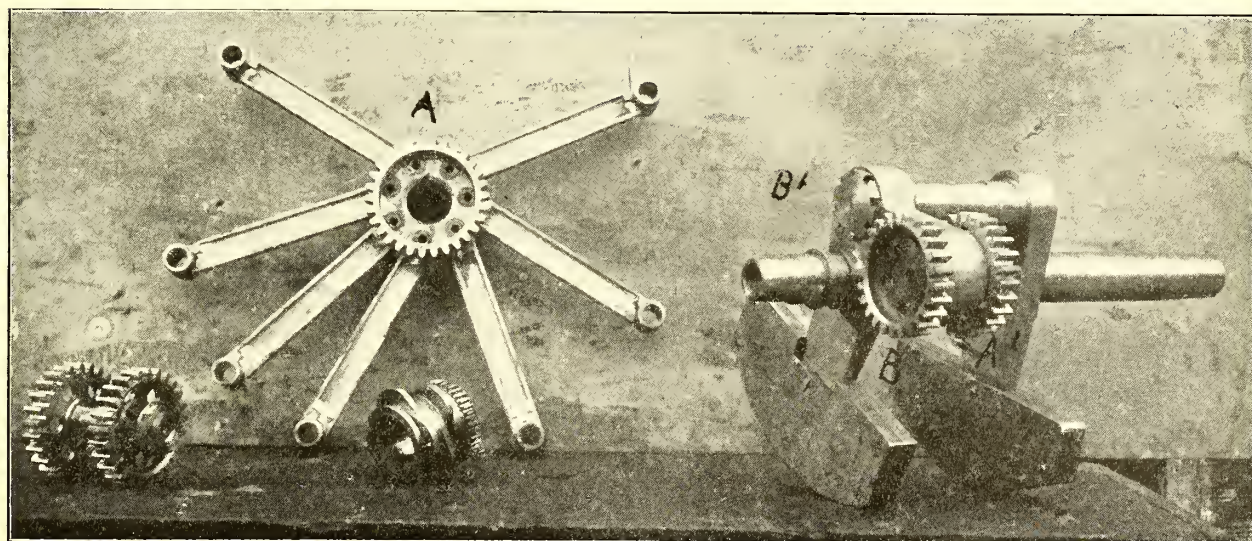


Fig. IV., showing crankshaft and big-end arrangement of the Salmson Engine.



are enclosed—from the front cover-plate that encloses the primary motion of the valve-gear and the foremost crank-shaft ball-bearing. A point to note, however, is that the tappet-rods are held down—in free compression-contact—upon their jumping-pieces by the "mouse-trap-type" valve springs. Therefore it is sufficient merely to cup their lower ends deeply over ball-heads on the jumping pieces, without other attachment. Consequently their length may be adjusted to perfection by merely twisting them a turn or two in the threaded sleeves of their rocker-joints above.

The uncommon type of valve spring, light as it looks, is not only strong enough, but is likely to remain so longer than any other, and is therefore the best that could have been chosen. For its life as a spring is doubly preserved by the distance of its coil from its free working ends; first because the coil—which embodies the entire spring-action—is carried clear of the heat of the cylinder-head; and being farthest from the valve-action, is less affected thereby than any other type of spring.

#### Other Details.

Having also noticed the simple and effective system of setting the cylinders rigid in their crank-chamber sockets—by means of a taper-sectioned split-ring, which, when tightened by its bolt, rises on the cylinder-trunk against a reverse taper in the socket, and so locks the cylinder fast—the only other mechanical details of the Salmson that remain to be discussed are the water-pump and magneto, and the lubrication system. The two former, however, may be dismissed by saying that both are driven off the same gear, which is set solid on the extreme after end of the crank-shaft, outside the crank-chamber; where its boss and web also serve as a dust and oil cap for the rearmost ball-race.

#### Some Ignition Features.

The distribution, too, is much as would be expected, consisting as it does—in the 7-cylinder type at least—of a secondary brush-carrying distributor, gear-driven at half-speed from the crank-shaft, and revolving in the same direction within a stationary terminal plate; on which the terminals are set in the order of firing, 1, 3, 5, 7, 2, 4, 6. On the other hand the magneto in the 9-cylinder type gives four sparks per revolution, and carries its own distributor, in which the brush-carrier revolves, (and its brush rotates) counter-clockwise, i.e., from right to left. This occasions a somewhat different system of mechanical adjustment—to be discussed later—but as would be expected, the same sequence of terminal-setting and order of ignition is employed: i.e., 1, 3, 5, 7, 9, 2, 4, 6, 8.

In the 14-cylinder model however the ignition-setting, though apparently complicated, goes simply enough in the order 1, 2A, 3, 4A, 5, 6A, 7, 1A, 2, 3A, 4, 5A, 6, 7A. This may be more clearly understood by the following diagram, setting forth the cylinders as it were on a flat ribbon; those marked A being the back row:—

1A 2A 3A 4A 5A 6A 7A  
1 2 3 4 5 6 7

The reason that No. 1A does not follow No. 1 is that the former working as it does on the same crank-pin as the latter, is nowhere near the firing position, mechanically, in its cycle; whereas No. 2A immediately precedes No. 3. In other words, the firing runs exactly like the knight's move in chess.

(To be continued.)

#### A Chance for Inventors.

From the "Times" advertisement columns:—

"Zeppelins can be brought down immediately by a new one-pound shell. Excellent opportunity for a patriotic lady or gentleman with £1,000 to render important national service and earn large profit.—Address Shell, care of Willing's, 50, Cophall Avenue, E.C."

What is wanted is not a new kind of shell, but a gun which will hit a Zeppelin when it sees it or smells it. The most up-to-date shell in the world is useless if it does not hit the mark. How about a shell fitted with a strong electromagnet to draw it towards the engines of the airship?

#### The Historic Albatros, R.N.

The Mechanical and General Inventions Company (Limited) last week sued the Albatroswerke of Johannisthal for a declaration that they were entitled to the profit on an Albatros aeroplane, commandeered by the War Office, and to specific performance of a contract dated February 16th, 1914, by which the plaintiffs were to have the sole right for five years to manufacture Albatros machines in Great Britain on payment of royalties. The defendants denied that any contract was entered into with their authority.

Mr. Schwabe, K.C., opening the case, said the machine was brought over to this country from Germany before the war. When the war broke out the British Government thought they would like to have the machine, and they took it under their special powers. The Government had undertaken to pay a sum for the machine which showed a substantial profit on the price which the plaintiffs had to pay to the defendants, and the plaintiffs submitted that they were entitled to that profit.

In 1913 Mr. B. Joblinski, purporting to represent the defendants, agreed that the defendants should send a machine to this country to be shown to the authorities, and that if it passed the tests the plaintiffs should have the option of purchasing it at 28,000 marks, and the right to form a company to manufacture Albatros aeroplanes in this country for five years, on payment to the defendants of a royalty varying from 1,000 to 1,700 marks per machine.

An aeroplane was sent over, and Mr. Weiner, the defendants' managing director, came with it. Its exhibition was successful. The plaintiffs exercised their option, but Mr. Weiner repudiated the contract, and alleged that Mr. Joblinski had no authority to make it.

Counsel submitted that Mr. Joblinski had authority to enter into the contract, that the plaintiffs were entitled to the profit on the aeroplane requisitioned by the War Office, as they were the only persons who could deal with it, and that his Lordship had to assess the damages which the plaintiffs had sustained through breach of the agreement by which they were to have the sole right to manufacture Albatrosses.

Mr. McCordie, for the defendants, said he was in a great difficulty, as Mr. Weiner, whose evidence was vital to his clients' case, was in Germany and could not be reached. After discussion the hearing of the case was adjourned sine die to enable Mr. Weiner to be present.

#### Reconstructions at Brooklands.

The approach road to the Brooklands Track, which has suffered greatly from the heavy lorry traffic of the Royal Flying Corps, now in occupation of the flying ground, has recently been incipiently put in charge of repair gangs by the War Office authorities. The interior road to the aerodrome which had previously been diverted to the track at the point where the Cobham Bridge crosses the river (to avoid the wooden bridge over the water)—vehicles thereafter continuing round the track—now turns in again from the Cobham Bridge and goes over the interior to the aircraft sheds. It is understood that this was done in order that traffic to the flying ground might proceed by means of the road, thus in future avoiding use of the track except at one point.

Inquiries at Weybridge have elicited the information that there are hopes that the War Office will also undertake to repair the holes in the track caused by heavy military traffic, a consummation devoutly to be wished, as the track now suggests experiments with "Jack Johnsons."

Subject to any restriction imposed by the Officer Commanding, members of the Brooklands Automobile Racing Club still have the right to visit the Weybridge aerodrome, where, while the military authorities are in occupation, good flying is to be seen in practically all weathers. It now only requires the repair of the track for matters at Brooklands to resume something remotely resembling their normal course.

#### An Unmentionable Record.

It is rumoured that Mr. Hawker, flying a Sopwith tractor with a Sunbeam-Coatalen engine, has put up a height record with three passengers. No figures as to date or altitude can be given at present.

**DENMARK.**

THE AEROPLANE'S Danish correspondent writes:—

The German casualty list, published in "Flugsport," March 10th, contains the following names:—Feldflieger department: Capt. Zühlke, slightly wounded; Oberlieut. von Renesse, missing; Oberlieut. Bremer, hitherto missing, taken prisoner; Lieut. Woelfert, killed; Lieut. Krause, missing; Lieut. in the reserve, Wennmohs, missing; Lieut.-Aviator Ally, killed in accident; Lieut.-Observer Klemm, killed in accident; Lieut. Freiherr von Kettler, missing; Lieut. Hug, hitherto missing, taken prisoner; Sergt. Schermer, killed; Reservist Buschhauer, hitherto severe wounded, died in French prisonership; Chauffeur Holstein, hitherto heavy wounded, in Russian prisonership; Chauffeur Jander, hitherto missing, in Russian prisonership.

"Flugsport," of March 27th, contains the following casualty list:—Feldflieger department: Capt. von Kleist, killed by accident; Lieut. Rittan, slightly wounded by accident; Lieut. in the reserve Wennmohs, hitherto missing, taken prisoner; Sub-officer Schuhmacher, died from illness; Serg. Wolff, missing; Voluntary Sub-officer von Stülpnagel, missing; Aviator Klemke, wounded by accident; Aviator Abels wounded by accident; Voluntary Aviator Leidig, died from illness; Aviator Eisenberg, died from illness; Wehrmann Kurz, killed; Wehrmann Hockenmeier, killed; Voluntary Bohme, killed in fatal accident.

"Flugsport," of April 7th, just special quick to hand, gives the following aerial war information:—The above-mentioned flight accident, when a military aeroplane fell into river Elbe, can be added with the further news: The aviator was the well-known officer pilot W. Meyer, the former manager of the aerodrome Dresden-Kaditz; he was en route from Doberitz to Kaditz, when he fell during a snow-storm into the river; both he and his passenger, Sub-officer Sedlazeck, being drowned. Oberlieut. Meyer was one of the first Saxon military aviators turned out, his ticket, taken on Grade monoplane, wearing the No. 136 of November 18th, 1911.

The casualty list runs, Feldflieger department: Lieut. Ammon, missing; Lieut. of the reserve Bernius, heavy wounded; Voluntary observer Lichtenstein killed by accident; Aviator Sub-officer Zawatzki missing; Voluntary Aviator Gracob, heavy wounded in accident; Officer Ersatz Arntzen, slightly wounded.

The Russian military aviators, Oberlieut. Kowanko, son of Generallieut. K., and Lieut. Jakowenka, were taken prisoners by the Austrians during a patrol flight. An Austrian aviator dropped a message of their fate above the Russian position, which was brought to Grandduke Alexander Nikolajewitsch.

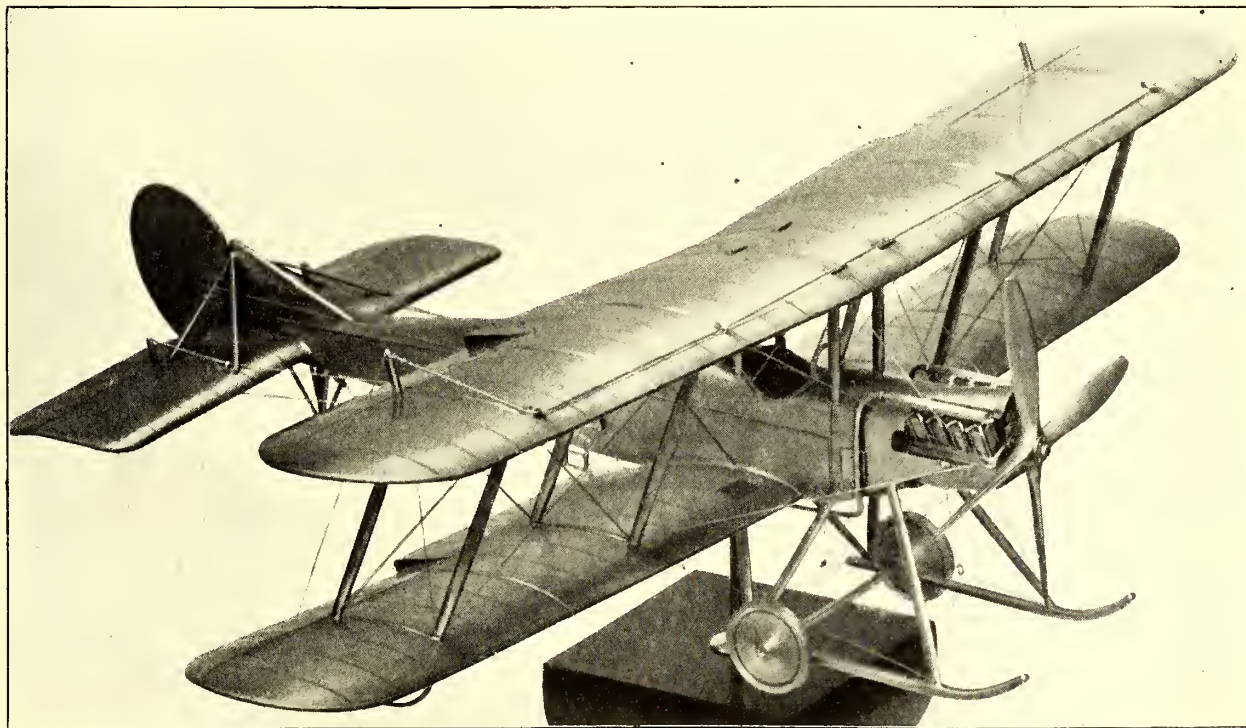
A new aircraft factory Flugmaschine Rex G. m. b. H. has been founded in Cologne, the reason why to mention this, being, that the aeroplanes to be built by the company are light models, especially the Morane-Saulnier monoplane and the Bristol scout biplane. Drawings and scales for the latter, valuable Mark 5,000, were supplied by Dr. Hansen, who is no doubt the well-known aero-technic author, who was known to be in London prior to the outbreak of the war, according to articles by him, signed from the English capital. [Also of the Statax Engines?—Ed.]

Dr. Freiherr Karl von Skoda, the maker of the Austrian motor batteries, has founded a new Austrian aircraft factory, together with "The Austrian Bank of Commerce and Industry," works for the manufacture of aeroplanes and engines of modern types to be erected in Wiener-Neustadt, capital 600,000 kronen.

The Austrian officer pilots, Captain von Kaiserfeld and Oberlieut. Schartner, have been taken prisoners by the Russians; the former has sent the following letter to his wife in Vienna:—"Since the day before yesterday I am a prisoner; rest at present together with Oberlieut. Schartner in a peasant's left rooms and shall likely be brought to Moskau to-morrow. Through the courtesy and kindness of the commander of the Petrograd Guards Corps I am now able to tell you and Misses Schartner in Urfahr-Linz of our fate, the letter going via Sweden. Let me be silent of the cause of our being taken prisoners. Till the end of the war I cannot get rid of the thought; this is the most severe fate which can befall an officer. And this fate we were just to share."

According to a private cable from Petrograd to the Copenhagen newspaper, "Politiken," two of Japan's best-known military aviators, Wakanki and Saito, have volunteered for Russian Army service.

Tragicomic is the fate of a Russian aviator belonging to the Old Bojar Prince family, who alighted by the Galkower wood, on the Eastern frontier, just amidst the prisoners the Germans had made from the corps Scheffer-Boyadel, on the day after the



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battle by Brzezeny. The unfortunate aviator had the task to go for the reinforcements for his corps, bested in big need, by the gallant fighting of the German Litzmann division, which was to be beaten. The flight was his first in the war, and taking the prisoners for the reinforcement, he landed, waving his hands to all sides. Afterwards he beat his forehead, shouting in his Russian something which would mean likely as much as: "I fool!"

### The Fabric Question.

The "Times" of April 24th says:—"The Admiralty have recently taken steps, through the agency of an expert, to organise the production in Lancashire of the cotton fabric used for the 'wings' of aeroplanes. The fabric needed for this purpose must combine lightness with strength, and the greatest care must be taken to detect flaws, which might cost an airman his life. It is made from a yarn so fine and of such high quality that not more than half a dozen spinners can produce it; and it is believed that its production is confined to Lancashire. We are informed on good authority that at least one large consignment for export which, it was thought, might have been destined ultimately for the enemy has been stopped within the last few weeks. Those who are urging the Government to declare cotton absolute contraband point to this as another illustration of the importance of cotton to a belligerent."

The allusion is curious, as cotton fabric will not compare with linen for strength, and unlimited supplies of unbleached linen are available in Belfast and district.

### Our Reliable Press.

Much is heard these days of the power of the halfpenny Press and its influence on the "great soul of the public." Here are some examples of the mysterious way in which the said Press moves "its wonders to perform."

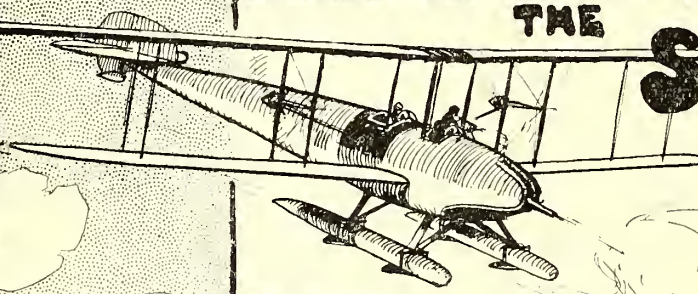
In the "Daily Mirror" and other papers, on April 24th, there appeared a photograph of a perfectly good Parseval-Sieffeld kite-balloon, put to bed for the night under an awning, and guarded by soldiers. The "Mirror" labels it: "Austrian Gasbag Wrecked—Austrian soldiers guarding one of the wrecked airships. These gasbags have not been any more successful than the much-vaunted Zeppelins."

The following effort was also perpetrated by Reuter's correspondent at Petrograd on April 23rd, and accepted with touching faith by most of the London papers of the 24th, although the "Globe" had acutely pointed out on the 23rd that the "Ilya Mourametz" is an aeroplane:—


"An Ilya Mourometz airship (sic) flew over Ploek yesterday and threw fifteen bombs of considerable weight, some of which struck German boats on the Vistula. Other bombs burst in a square of the city and among the enemy's transport."

"Two other Russian dirigibles, an Ilya Mourometz from Kieff and a No. 3, bombarded the railway station at Mlaw and the German aerodrome at Sanniky. Each dirigible threw bombs, the total weight of which exceeded five hundredweight."

"Three bombs struck station buildings, two others fell on aeroplane hangars, and two more hit aeroplanes which were not under shelter. Several fell in the enemy's trenches."



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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.



"The Russian air-Dreadnoughts flew at a considerable height and the enemy's fire did them no damage."

Readers of THE AEROPLANE will, of course, remember that the "Iliia Mourametz" ("Elija the Prophet") is, or was, a large experimental Sikorsky aeroplane with four Benz engines of 100 h.p. each, which, although a prodigious weight-lifter, was hardly suitable for military purposes. An earlier and smaller Sikorsky with two engines was named the "Russki Vitis," or "Russian Knight."

It is possible that the wild story of Reuter was based on performances by a couple of 400-h.p. machines of the "Iliia Mourametz" type and an improved type known as No. 3. The weight of bombs thrown—560 lbs. by each machine—is nothing startling, considering that "Iliia Mourametz" flew with 16 people on board, and 500 lbs. only represents the weight of four small men, or 80 gallons of petrol.

### Flying at Hendon.

On Thursday afternoon a contingent of the 9th Battalion of the Bedfordshire Regiment visited the aerodrome during a route march. The men, who were about 600 strong, took a keen interest in the flying and thoroughly enjoyed the afternoon's proceedings.

Among the pilots who gave exhibitions were Messrs. Roche-Kelly (50-h.p. Beatty-Wright biplane), Baumann (60-h.p. Ruffy-Baumann biplane), Osipenko and Winter (50-h.p. Grahame-White school machines), Warren (L. and P. biplane), Hall (Caudron biplane), and Mr. Manton, who was out again on the fast G.-W. military two-seater scouting biplane with a 100-h.p. monosouape Gnome.

The sky on Saturday was rather overcast and the wind gusty, but the attendance was fair, and there was plenty of flying to be seen.

Perhaps the most interesting event was a fine flight of an hour's duration by Mr. Manton on the Morane formerly owned by Lord Carbery, which has been specially overhauled for the Naval Air Service. As it was only the second flight he had made on a Morane, Mr. Manton made a particularly good display, and his landing was beyond reproach. Mr. Osipenko also did exceedingly well in a tricky wind on a box-kite, while Mr. Roche-Kelly was out on a Wright.

On Sunday it rained and visitors stayed away in thousands.

People are beginning to find out that they can always see first-class flying at Hendon, and as the weather improves and it becomes more pleasant to be out of doors the "gate" is likely to increase. One is glad to see so many sailors and soldiers among the visitors every day, for the number of different machines they see at Hendon is bound to be of high educational value.

### A Convincing Test.

Considerable interest attaches to the result of a test which was carried out by a well-known firm of aeroplane manufacturers with a piece of thin Triplex Safety Glass measuring 30 in. by 15 in. and 3-32 in. thick.

This piece was subjected to a test equal to a pressure of 185 lbs. with the machine travelling at 150 m.p.h. without any apparent effect on the glass, not even a crack.

It is interesting to know that triplex safety glass of this thickness weighs only 17 ozs. to the square foot.

It is a curious commentary on official modernity that the test had to be carried out by private enterprise, as the National Physical Laboratory, when requested to try it, had to confess that they had no appliances for such a test. A quaint admission for the leading authorities on the action of the air!

Recently the firm had an inquiry for some dozens of pairs of goggles from a representative of a flying school, subsequent to an unfortunate accident whereby the pilot was unlucky

enough to lose his eyesight through using ordinary goggles.

The firm writes further:—"As you know, we are supplying large quantities of goggle glasses for aviators, and through the publicity of your valuable journal we have had endless inquiries."

### Dope.

George Frisby, 60, compositor, was charged at the North London Police Court on Saturday, April 24th, with disorderly behaviour at Hornsey Road.

A constable said that at 11.30 on Friday night the prisoner shouted, "Aeroplanes! Zeppelins! Shoot 'em down!" A scare was created. Mr. Hedderwick (to the prisoner): Don't you think you are a silly ass? The Prisoner: I do, sir. Mr. Hedderwick: You must pay 10s.

### School and Weather Reports.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
Hendon ... ..	Good	Calm	Calm	Calm	Windy	Calm	Windy
South Coast ..	Fine	Fine	Fine	Dull & Show'y	Fine	Fine	Wet Cold
Lake District	Windy	Fine Windy	Fine	Fine	Very Fine	Fine	Fine Windy

**Hendon.**—AT THE GRAHAME-WHITE SCHOOL.—Instructors: Messrs. Manton, Russell and Winter. Pupils with instr.: Prob. Flt. Sub-Lieuts. Bingham, Coleman, De Ville, Hutchinson and Simpson. 8's or circs. alone: Prob. Flt. Sub-Lieuts. Bone, Kirby and Potts. Certificate taken by Prob. Flt. Sub-Lieut. Potts. Machines: Grahame-White biplanes.

AT HALL SCHOOL.—Messrs. Cook, Hill, Minot, Lieut. Blyth, Messrs. Mitchell, Hatchman, Mason, Cini, Stevens, Snowdon, Lieut. Barker. Instrs.: Messrs. J. L. Hall and J. Moore.

AT THE LONDON AND PROVINCIAL AVIATION CO.'S SCHOOL.—Instrs.: Messrs. Warren and Smiles. Straights or rolls: Messrs. Gould, Crooke, Smiles, Genit Forbes, and Tranchomme. 8's or circs.: Messrs. Lincoln, Gould, Crooke, and Genit Forbes. Mr. Lincoln took his brevet on Wednesday, April 21st, and Mr. Gould took certificate on Saturday, 24th, reaching 1,200 ft. in his height test, a very good performance.

AT THE BEATTY SCHOOL OF FLYING, LTD.—Instrs.: Messrs. G. W. Beatty, W. Roche-Kelly, and C. B. Procter. Pupils with instr.: Messrs. Allcock (25 mins.), Bright (40), Chapelle (15), Cooper (41), Crowe (6), de Meza (20), Faning (15), Fraser (30), Leong (50), Monfez (5), Roche (45), Whincup (5), Wiles (5), FitzHerbert (5), Crossman (5), Johnston (10), Rutherford (5), Ross (5), Hay (15), Summers (15). Machines: Beatty-Wright dual-control and single-seater. Exhibition flights were given on 22nd and 24th, and 4 passenger flights were taken.

AT THE RUFFY-BAUMANN SCHOOL.—Instrs.: Messrs. E. Baumann and the James Brothers. Pupils with instr. on 60 Caudron with Mr. E. Baumann, Messrs. Bell (10 mins.), England (8), Elmson (17), Virgilio (10). Rolling: Messrs. Sykes (40) and Cole (32). Strts.: Messrs. Blandy (40), Jackson (44), Bell (44), Roobaert (24), England (12). 8's: Mr. Kenworthy (60). On Saturday Mr. Kenworthy did half his tests for certificate. Machines: 60 Caudron, 50 and 45 h.p. R.R. tractor biplanes. On Thursday Mr. Baumann out on 60 Caudron with passengers.

**Windermere.**—AT THE N.A.C. SEAPLANE SCHOOL.—Instructors: Messrs. W. Rowland Ding, C. L. Pashley and J. Lankester Parker. Pupils with instr.: Flt. Lieut. L. L. Atherton (42), C. A. Barber (16), D. S. C. Macaskie (32), F. H. M. Macintyre (39), G. L. Railton (56), H. Robinson (54), J. F. Ridgway (43), H. Slingsby (53) and H. P. Reid (42). 8's or circs. alone: A. Buck (74) and S. J. Sibley (57). Machines: N.A.C. propeller biplane and Avro dual-control biplane. Messrs. C. L. Pashley and J. Lankester Parker out testing.

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"THE AEROPLANE," MAY 5, 1915.

# THE AEROPLANE

*Edited by C. G. GREY. ("Aero-Amateur")*



VOL. VIII. [REGISTERED AT THE G.P.O.  
AS A NEWSPAPER.]

WEDNESDAY, MAY 5, 1915.

No. 18

## THE OUTPOST.



A Kite-Balloon (Parseval-Siegsfeld type) at anchor in the grounds of a Chateau at X—.





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## Something Like a Reputation.

There is sometimes real humour in the contrast between the fictitious artificially produced reputation and the real reputation of a person or institution, and those who are out to profit by humbugging the people will do well to remember the old Yankee proverb—"You can fool all the people some of the time, and some of the people all the time, but you can't fool all the people all the time."

Still, it is marvellous how nearly all the time some smart men can fool nearly all the people, and yet how curiously a fictitious reputation can be burst up in unexpected ways.

These reflections were brought to mind by a friend whom I met the other day. He had been reading Lord Kitchener's inspiring address to the employees of the Royal Aircraft Factory, those hard-working slaves to their own patriotism who are not only labouring night and day to save the Royal Flying Corps—seeing that the Royal Naval Air Service ungratefully refuses to be saved by them—but are also, and, incidentally, making fortunes for themselves and the lodging-house and public-house keepers of Farnborough.

I regret to say that my unregenerate friend was laughing immoderately, not at the words of the Minister for War, but at the cleverness of the people who managed to extract from the great silent K. of K. so much praise for so little value received. We may surely expect a regular rain of C.B.s and probably a few K.C.B.s round Farnborough in the next honours list.

However, here is what he had been reading from a morning paper:—

### "LORD KITCHENER'S MESSAGE TO ROYAL AIRCRAFT FACTORY."

Following his recent visit of inspection to the Royal Aircraft Factory at Farnborough, Earl Kitchener has written a message to the workers there, and this has been printed and a copy presented to each employee. The message is as follows:

"I am pleased to have the opportunity of expressing my appreciation of the grand work which is being done by the employees (both men and women) at the Royal Aircraft Factory. I am sure that they are willing to put up cheerfully with discomforts and difficulties both in connection with their long hours of work and in the matter of housing, because they appreciate the fact that work in war munitions such as aircraft and their parts and accessories is of vital importance to the British Army. Their work is of real value, and they can all feel that by their exertions they are helping the troops in the field."

One really sympathises with the better class workmen at the R.A.F., for the "discomforts and difficulties in connection with their long hours of work" are undoubtedly great. For instance, it must be difficult for a conscientious man to fill in a time-sheet showing four hours spent in making a split-pin or a cheese-head rivet—which is just about analogous to what is actually done. Also, a clean-minded and patriotic inspector must endure considerable discomfort in his own mind when he has to pass stuff made in the Factory though he knows he would have to reject it if it were made outside. These "discomforts and difficulties," to quote K.'s own words, must be the greater

for all honest men, "because they appreciate the fact that work (note the word 'work,' not merely filling time-sheets) in war munitions . . . is of vital importance to the British Army." I fancy, however, that the leaven of decent honest workmen—and they are not a few—at the R.A.F. do not put up with these particular discomforts and difficulties quite as cheerfully as the writer of the message hoped they put up with mere bodily discomfort.

To the really clean-minded and patriotic workman the "graft" that goes on inside the R.A.F. is a continual mental worry, and the killing of time, just to keep the shop pay-roll high, is actually physically wearisome. With such men one can sympathise heartily.

### Tribute to Cleverness.

The fact that such a message should have been extracted from the highly efficient K. of K. only shows the remarkable cleverness of some people. No one minded Lord Haldane being polite on similar occasions, for a man whose "intellectual home is in Germany," while his body (what there is of it) is in England, may easily be absent-minded. Also, one could expect nothing better from that J. E. B. Seely, Lieut.-Col. (T.)—now Temp. Brig.-Gen.—whose efficiency in laddling out what our American friends call "butter" is proverbial, despite his inefficiency in other directions.

However, one gathers that our present admirable War Minister was rather in a hurry on that day, and only had time to visit a small portion of the "works." Which reminds one that a certain, apparently inspired, paragraph, which was published to the effect that he watched bomb-dropping experiments by an R.A.F. pilot, seems a trifle misleading, for it is reported unofficially that the R.A.F. patent bomb-release gadget refused to function adequately when on the ground, and so delayed the start that the Ministerial party had moved on before the bomb-dropping actually began.

One hopes that the said gadget will be perfected before being used on active service, otherwise valuable pilots may be wasted and German targets may be missed, for people on the ground for whom bombs are intended have a habit of acting like the little girl's rabbit who "wouldn't stop still to be counted."

### What the Army Thinks.

The aforementioned friend's amusement was largely due to his recollection of the other side of the picture as presented to him a few days before by an infantry officer who had just returned from very active service. Finding that my friend was interested in aviation—he has no financial interest in it, by the way—the infantryman asked, "What is this R.A.F. that the Flying Corps are so sick with?"

Then he went on to explain how he had been dining with the staff of a certain brigade or division or corps, just before he left France, and had met at dinner sundry R.F.C. officers, of rather senior rank. They had apparently been somewhat bitter about certain shortcomings in equipment which they blamed emphatically and fluently on the R.A.F. The grievance that struck the infantryman most was the fact that we had been compelled to rely on France for our engines and on Germany for our magnetos.



Being a plain, commonsense person the infantryman could not understand how any Government establishment could be so blind, even in time of peace, as to depend on any foreign country, even an ally, for war material.

Of course, there was no one to explain to him that in 1912 and 1913, when most of the harm was done, the R.A.F. was busy trying to squeeze British aeroplane and engine firms out of business, so that the Army might be forced to standardise on R.A.F. designs. The infantryman did not know that if the Green engine had been encouraged even so late as 1913 we might have had something to beat even the German Mercedes—the envy of both our Flying Services. He did not know that an order for fifty engines would have resulted in the Gnome being built in this country two years ago. He did not know that any quantity of magnetos, actually better than those made in Germany, could and can be bought in America, nor that at least one British magneto, which expired as a firm a year or two ago, is quite as good as any German, but that the R.A.F. preferred to specify German magnetos or nothing. All he did know was that the R.F.C. was very sick with the R.A.F.

## On the Light and Airy Spirit.

Aviators are curious people, "curiouser and curiouser"—as Alice said—the more one gets to know them. It has already been remarked by such as live in slushy trenches that the Flying Services seem to regard the whole war as a show got up for their particular edification, and certainly they seem to take life—and death—more cheerfully than anyone else. As a matter of fact, the pure air they breathe when aloft, not to mention the castor oil they consume in an atomised form from their engines when on the ground, probably does help to keep them aggressively fit, for lung and liver have more to do with mind and soul than most people think.

The Romans knew more of many things than we do, and by them the liver was regarded as the seat of the affections and the motive organ for most mental processes. Where we say of a man that he has "a great heart," they said "he has a splendid liver"—and they were much nearer the truth than we are. The French retain something of the Roman estimate of the liver, for where we say—or rather the vulgar aviator says—"he has got cold feet"—meaning that he is afraid—the French say, "*Il a les foies*," which phrase corresponds quite closely to an obsolete English phrase, only prevalent now in "costume" plays and in books on "Bucklers and how to Swash them," wherein the hero curses the cowardly villain for a "lily-livered knave."

### The Modern Lothario.

Anyhow, the aviator is a merry wight and takes life remarkably cheerfully, whether it be his own or someone else's. The Cavalier who loved and rode away has apparently his modern counterpart. One such was discovered the other day in a manner worthy of telling.

One of the bright particular ornaments of one of the Flying Services is an officer whom we may call Captain Boggs—you will not find his name in the Army List, though it is in the London Directory—so I am perfectly safe not to betray his identity. He is a thoroughly good chap, a fine flier, and an efficient officer, and if he is a trifle capacious about the affections it is merely because his personality is a kind of permanent ground-bait for feminine adorers, which is not his fault.

Anyhow, the night before his squadron left for active service Captain Boggs was observed to be very busy with pen and paper, and the morbid-minded among his brother officers accused him mentally of giving way to the weakness of making a will, or taking a fond farewell of his rich aunt, or some such frailty of

Probably other people in the Army know it, too, by now, so the R.A.F. advertising agent had better get seriously to work or else public thanks and the expected sprinkling of promotions and titles and orders may not arrive. When one compares what the R.A.F. might have done—even if it had followed the advice of a mere newspaper like this—and what it has done, one's smiles become a trifle grim.

The R.A.F. always reminds me of the story of the Italian paviours and the Irish gangers. A dozen Italians had been chattering and jabbering and disputing for half an hour in an effort to lift a big drain-pipe out of a trench in a road which they were repairing. Finally the big Irish ganger strolled down the street to another gang and said to the ganger there, "Come here, Mike, and gimme a hand!" The two cleared the Italians out of the trench, spat on their hands, laid hold of the pipe, and with one colossal heave deposited it out on the road. They climbed out, wiped their hands on their trousers, lit their pipes, and then the first ganger jerked his thumb contemptuously towards the group of wondering Italians and remarked, "And, begob, Moike, *thin's* what they makes Popes of!!"

weak-kneed groundlings. Next morning, as he was "mounting into his apparatus"—as the French say—he was observed to be carrying a message-bag, a somewhat unusual and unnecessary burden for a cross-Channel passage. Thus equipped the gallant Boggs flew away, and out of the story. The rest is the tragedy of an Englishman's Home.

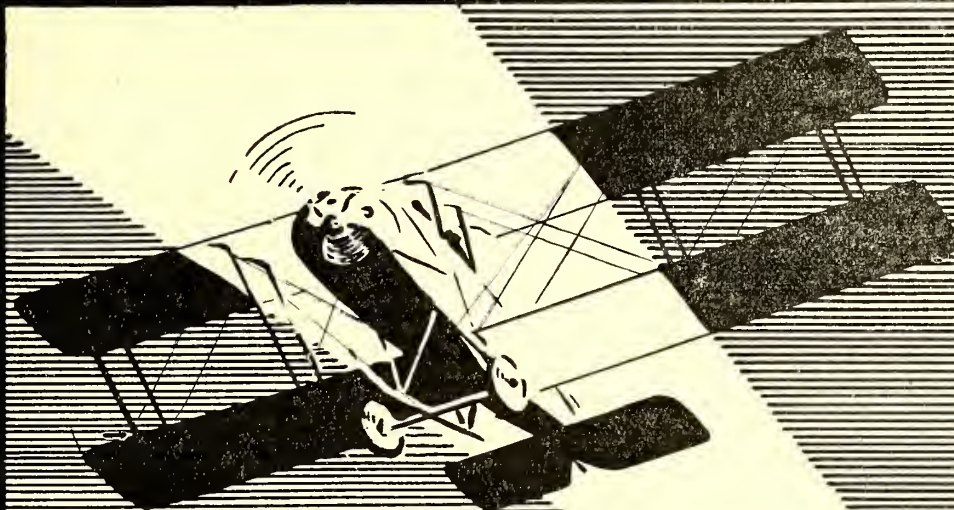
At a peaceful health resort, on the route from X—in England to Y—in France (deletions by our home-grown Censor)—a number of soldiers of Kitchener's Army, quartered in the vicinage, were watching with admiration the gyratory gymnastics of a tractor biplane over the town, when something was observed to fall from the aeroplane into a private garden. With true Service spirit they proceeded to the house and demanded that the Government property which had fallen in the grounds should be delivered to them. A search was instituted and a message-bag was found containing a letter addressed to a lady resident in that eligible villa—vide house-agent's advertisement. Despite the address the Army very properly insisted that it should be handed over to the Military Authorities. In thus wise the letter came into the hands of the G.O.C. that district, who, with equal propriety, opened it, suspecting clandestine correspondence of international, or at least Imperial, import.

It is alleged, on wholly unreliable evidence, that his ruddy cheek assumed an even more blushful hue when he discovered a *billet doux* commencing with: "Mate of my lonely soul," and other impassioned and poetic phrases, suggesting at least a "Three Weeks'" acquaintance. Other equally unreliable information states that the gambit was merely, "My blue-eyed darling," or words to that effect. Considering that the letter was presumably only seen by its writer, its recipient, and the General, one may disregard this evidence.

However, it was apparent that the novel method of delivery had been adopted in order to circumvent the vigilance of some dragon, male or female, who guarded the lady from the world, the flesh, and the devil generally. Consequently, the General, having in duty bound read the epistle from start to finish, lest the affectionate opening should only be a blind for more serious secrets, acquitted himself with that old-world gallantry which distinguishes the higher branches of the Service, and sent it round by orderly to its intended destination.

Whether the letter there escaped the dragon's maw is not recorded in this history, but the incident shows the





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#### Spring Poets on Service.

The Spirit of Spring seems to have increased the naturally high spirits of our aviators, and to have infected some of them with the poetry of motion to an unusual degree. For instance, one who has, at least so he thinks, various friends in the Services, received a letter the other day from a young officer who has done distinguished service, in which the writer stated that he and various others, equally distinguished, had wrought in spirit to evolve a poem worthy of the air. Apparently someone else at the same time was busy playing "Sister Susie," and the two efforts became inextricably mixed, with the following dire result:—

"British Birdmen Bringing Bombs for Bosches,  
"Breaking Blighters' Blooming Backs with Bits of  
Busted Bronze,  
"Haring Horrid High across the Heavens Hogging  
Homeward,  
"After 'Aving 'Acked the Ankles of the Angry  
Allemands."

One is recompensed for the strained alliteration of the last line by the beauty of the final rhyme, which has the true literary touch, depending as it does on the niceties of French pronunciation—as pronounced by our Army in Flanders, when not swearing according to tradition. There is true poetry also in the simile of hacking ankles, thus showing a just appreciation of the work done by aircraft as compared with the heavy body blows delivered by the Army on land. The use of the poetic word Bronze, instead of the more technically correct Brass or Gun-metal, also shows literary taste, besides obviating difficulties and paving the way for the polyglot rhyme mentioned above. One hopes that this same group of officers, or others, will co-operate in further efforts to raise the standard of literary taste in the Services.—C. G. G.

#### The Aeronautical Society's Faux Pas.

The following notice has been sent to this paper by the Aeronautical Society "per favour of publication":—

##### THE WILBUR WRIGHT MEMORIAL LECTURE.

In order to commemorate the work of Wilbur Wright, who, with his brother, Orville Wright, evolved the first successful power-driven aeroplane, the Wilbur Wright Memorial Fund was created under the auspices of the Aeronautical Society for the purpose of providing for the annual delivery of a Premium Lecture.

The third Lecture will be delivered by Prof. G. H. Bryan, F.R.S., on May 20th, 1915, at the Royal Society of Arts, John Street, Adelphi, at 8.30 p.m.

The meeting will be rendered especially noteworthy by the fact that the Gold Medals of the Aeronautical Society, awarded respectively to Prof. Bryan and to the late Mr. E. T. Busk, will be officially presented immediately before the Lecture. The late Mr. Busk played a unique part in the extension to full-sized aeroplanes of the masterly theoretical methods of calculating aeroplane stability due to Prof. Bryan, and lost his life by fire in the air while carrying out his experiments.

Machines designed by the methods thus evolved form a large proportion of the aerial equipment of the Royal Flying Corps, which has gained so striking an ascendancy over the enemy, and has rendered services "of incalculable value" to Field-Marshal Sir John French.

Tickets, of which the number is limited, may be obtained on application to the Secretary, Aeronautical Society, 11, Adam Street, Adelphi, W.C.

It is with great regret, under the circumstances, that one is compelled, in the interests of truth, to draw attention to a paragraph in the notice which, if it is not a deliberate misstatement, is, at any rate, liable to convey an entirely erroneous idea. The aeroplane which was evolved as the result in part of Professor Bryan's calculations, which acted as a check on theories held for some years previously by many practical ex-

perimenters, and in part of the application of those theories by the late Mr. Busk, is the Royal Aircraft Factory's B.E.2c.—and no other, with the sole exception of the same firm's B.E.8a. It is literally, and, unfortunately, true, that aeroplanes of this type "form a large proportion of the aerial equipment of the Royal Flying Corps."

The balance of the penultimate paragraph distinctly conveys the impression, by suggestion, that these machines are among those which "gained so striking an ascendancy over the enemy" and "rendered services 'of incalculable value' to Field-Marshal Sir John French." If anyone conveyed such an impression as a direct statement it would be a deliberate falsehood.

The strict truth is that when Sir John French used the phrase "of incalculable value," only one aeroplane of B.E.2c. type was in use on active service, and that one differed very materially from those of similar type as standardised by the R.A.F. Furthermore, no B.E.2c. has shown its capability of acquiring "an ascendancy over the enemy," because, with the exception of one or two recently turned out with special engines, none of them can approach the German aeroplanes in speed or rate of climb.

The careful wording of the objectionable paragraph shows the same skill in conveying misleading impressions by suggestion as have various articles in the press—notably, those of "Ornis" in the "Times," and one can only assume with regret that the Aeronautical Society is unthinkingly letting itself be used as another advertising medium by the Royal Aircraft Factory.

Considering that the late Mr. Busk was burned to death on an aeroplane built throughout, engine and all, at the R.A.F., and that the R.A.F. experimental engine has quite recently been breaking up on test in ways which might well be conducive to fire in the air—such as burst cylinders and broken valves—one would have thought that anyone connected directly or indirectly with that establishment who might have been concerned with the drawing up the Aeronautical Society's circular might have hesitated before plastering a barely veiled advertisement for the R.A.F. on the late Mr. Busk's tombstone.—C. G. G.

#### The Anti-Aircraft Corps.

On April 28th Mr. Macnamara informed Mr. Fell (U., Great Yarmouth) that at the first formation of the Anti-Aircraft Corps there were 100 special constables, no record of whose ages could be found. Up to March 31st last 45 per cent. of the men of the corps were of non-military age, and 55 per cent. of military age, a large proportion of the latter coming from the Office of Works and other Government Departments, who could not release them for more active service.

After the reconstruction of April 1st, 46 per cent. were of non-military age and 54 per cent. of military age. Large numbers of those of military age were medically unfit for more active service. It was pointed out that 100 discharges had been granted to officers and men to join more combatant units of the forces since the corps first started in November, and that over 200 of those in the corps had served or were serving abroad with the various anti-aircraft detachments. Any member of the corps who wished to join a more combatant unit was at once released for this.

#### A Matter of Fabric.

A Belfast correspondent writes: "Regarding the article from the 'Times' entitled 'The Fabric Question,' in your issue of April 28th, it occurs to the writer that this may refer to fine cotton material such as is used for balloon envelopes.

"It seems unlikely that anything so fine as to be outside the capabilities to manufacture, of 'all but half a dozen spinners' in Lancashire, should be required for aeroplane wings, seeing that the weight allowed by the R.A.F. specification is 4 oz. per square yard with a tensile test of about 100 lbs. per inch.

"It would also, as you say, seem curious that the Admiralty should be 'organising the production of cotton fabric for the wings of aeroplanes' in view of the fact that weight for weight linen is stronger than cotton and considerably less extensible, which latter quality one would suppose to be a great desideratum in view of the importance of the wing surfaces retaining their tautness unimpaired for as long a period as possible."

"FABRICIAN."

# POINT BY POINT

# "TITANINE"

# DOPE

(free of Tetrachlorethane and all Spirit derivatives of Chlorine)

## Defies Competition

- ¶ **IMPERVIOUSNESS**—Examine a surface doped with Titanine with a powerful magnifying glass, and see how the fabric is filled in. Try this test with another dope. Try also varnishing over three coats of Titanine and three coats of another dope. Varnish will not penetrate Titanine, as can be seen by examining the back of the fabric.  
**TITANINE SAVES ONE OR MORE COATS.**
- ¶ **FLEXIBILITY AND ADHESION**—Dope two pieces of similar fabric with Titanine and another dope, bend the two samples backwards and forwards, expose both to the weather for a few weeks, and repeat the bending tests. The Titanine sample will retain its flexibility and adhesion in a remarkable degree, when other dopes lose the greater part of their flexibility and adhesion.
- ¶ **RESISTANCE TO FLAME**—Place a burning wax vesta on fabric doped with Titanine, and leave the match to burn completely out. Repeat the test with another dope. The result is convincing.
- ¶ **LIGHTNESS**—Three coats of Titanine, forming the impervious surface mentioned above, weigh less than 2 oz. per sq. yard. Four coats can be reduced to 2 oz., either by dilution with spirit, or by careful and rapid application. Tests will show that weight for weight, Titanine gives the most impervious skin.
- ¶ **RESISTANCE TO OIL AND PETROL**—Mr. J. L. HALL, of the Hall Aviation Co., Hendon, writes recently:—The Tractor biplane (coated with Titanine) has now been in constant use for two months, and the canvas is still clean and new looking, in spite of the deteriorating effects of oil, petrol, &c., and the water used in washing down the machine.
- ¶ **DURABILITY**—The manufacturers of Titanine satisfied themselves, before putting it on the market, that it possessed a durability hitherto quite unknown in dopes.
- ¶ **FINISH**—The matt surface of Titanine affords a firm hold for finishing varnish, which does not adhere equally well over a glossy surface. When no finishing varnish is applied, Titanine can be polished quickly, and inexpensively (and at less than one-fourth the cost of a coat of dope) by means of a special polishing fluid supplied by the manufacturers.
- ¶ **PRICE**—Let us quote you!

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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.



## Naval and Military Aeronautics.

### GREAT BRITAIN.

From the "London Gazette," April 27th, 1915.

ADMIRALTY, APRIL 25TH.

ROYAL NAVAL AIR SERVICE.—The Hon. C. M. P. Brazon to be squadron commander. April 19th.

\* \* \*

From the "London Gazette," April 28th, 1915.

WAR OFFICE, APRIL 28TH.

REGULAR FORCES.—STAFF.—ADJT.-GEN.'S AND QMR.-GEN.'S STAFF.—Depy. Assist. Qmr.-Gen.—Capt. (temp. Maj.) W. D. Beatty, R.E. (Sqn. Com., Military Wing, Royal Flying Corps), and to retain temp. rank, vice Maj. J. T. Dreyer, R.A. April 1st.

SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. lieuts. (on prob.) confirmed in rank: W. A. Grattan-Bellew, R. H. Mayo, S. H. B. Harris.

To be sec. lieuts. (on prob.): A. FitzR. P. H. Somerset-Leeke. April 5th. H. E. van Goethem. April 12th.

\* \* \*

From the "London Gazette," April 30th, 1915.

ADMIRALTY, APRIL 26TH.

ROYAL NAVAL AIR SERVICE.—Flight sub-lieuts. promoted to rank of flight lieut.: C. W. H. Pulford. March 26th. D. Harries. April 1st. S. Medlicott. April 15th (since dead). Proby. flight sub-lieuts. confirmed in rank of flight sub-lieut.: J. O. Groves. September 7th: E. Parker, November 14th. R. D. G. Sibley. November 16th. F. T. Digby. November 30th. B. D. Kilner. Dec. 3rd. R. S. Sorley. Dec. 4th. C. W. F. Morgan. Dec. 30th. R. C. Petter. January 4th.

Proby. flight sub-lieuts. for temp. serv. confirmed in rank of flight sub-lieut. for temp. serv.: R. Lord. November 10th. J. D. Newberry. November 23rd. J. T. Bankes-Price. December 16th. R. H. Mulock. January 20th.

APRIL 28TH.

Temp. Flight Lieut. H. Stanley-Adams transferred to permanent list of officers in R.N. Air Service. October 31st.

\* \* \*

From the "London Gazette," May 1st, 1915

WAR OFFICE, MAY 1ST.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Assist. Equipt. Officer.—Sec. Lieut. S. H. B. Harris, S.R. April 9th.

\* \* \*

From the "London Gazette," May 3rd, 1915

WAR OFFICE, MAY 3RD.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Appt. of Sec. Lieut. F. W. Goodden, S.R., as flying officer, ante-dated to Feb. 13th.

### NAVAL.

The following appointments were notified at the Admiralty on April 27th:—

ROYAL NAVAL AIR SERVICE.—Probationary Flight Sub-Lieutenants.—J. O. Groves, R. D. G. Sibley, E. Parker, F. T. Digby, B. D. Kilner, R. C. Petter, R. S. Sorley, and C. W. F. Morgan, all confirmed in the rank of Flight Sub-Lieutenant, with original seniority, and reappointed, to date April 24th.

Probationary Flight Sub-Lieutenants (for temporary service).—R. Lord, J. D. Newberry, J. T. Bankes-Price, and R. H. Mulock, all confirmed in the rank of Flight Sub-Lieutenants, for temporary service, with original seniority and reappointed, to date April 24th.

Temporary Commissions have been granted as follows:—

Captain G. Errington (4th North Staffordshire Regt.) and C. B. Fairer-Smith, as Lieutenants (R.N.V.R.), with seniority of April 20th and 26th respectively, and both appointed to the "President," additional, for duty with R.N.A.S. (Armoured cars): E. A. B. Belt, A. J. Dreydel, W. P. Donne, J. L. Allport, as Sub-Lieutenants (R.N.V.R.), with seniority of April 26th, and all appointed to the "President," additional, for duty with R.N.A.S. (Armoured cars).

Chief Petty Officer (R.N.V.R.) A. T. Miller, promoted to

temporary Sub-Lieutenant, with seniority of April 25th, and appointed to the "President," additional, for duty with R.N.A.S. (Armoured cars).

\* \* \*

The following appointments were notified at the Admiralty on April 28th:—

ROYAL NAVAL AIR SERVICE.—Mr. W. St. G. Clowes granted a temporary commission as Lieut., R.N.V.R., and appointed to the "President," additional, for duty with the R.N. Air Service, to date April 17th.

Flight Sub-Lieuts (acting Flight Lieuts.)—C. W. H. Pulford and D. Harries, promoted to the rank of Flight Lieut., with seniority, March 26th and April 1st respectively.

Messrs. O. Davis and E. C. Williams entered as Prob. Flight Sub-Lieuts. and appointed to the "President," additional, for R.N. Air Service, to date April 17th.

Chief Petty Officer D. W. A. Barton promoted to the rank of Prob. Flight Sub-Lieut. and appointed to the "President," additional, for R.N. Air Service, to date January 15th.

Assist. Payr. P. S. Sykes to the "President," additional, for duty with the Armoured Car Division, to date April 27th.

Messrs. K. M. Sturton and J. B. Vernon granted temporary commissions as Lieuts., with seniority April 12th, and appointed to the "President," additional, for duty with R.N. Air Service, to date April 26th.

Mr. A. E. Eldridge granted a temporary commission as Sub-Lieut., with seniority April 12th, and appointed to the "President," additional, for duty with R.N. Air Service, to date April 26th.

\* \* \*

The following appointments were notified at the Admiralty on April 29th:—

ROYAL NAVAL AIR SERVICE.—Flight Com. W. Briggs, advanced to the rank of Acting Squadron Commander, to date April 24th.

Flight Lieut. A. Nickerson, advanced to the rank of Acting Flight Com., to date April 24th.

Temp. Lieut. P. Barry, R.N.V.R., promoted to the rank of Temporary Lieut.-Com., to date April 24th.

\* \* \*

The following appointments were notified at the Admiralty on April 30th:—

ROYAL NAVAL AIR SERVICE.—The Hon. Maurice Egerton has been granted a temporary commission as Lieut.-Com., R.N.V.R., with seniority April 21st.

The following have been granted temporary commissions as lieut., R.N.V.R., to date as stated: G. C. Torrens, April 17th; S. F. Burgoine, H. K. Hitchcock, and L. A. Price, April 29th.

The following have been entered as probationary Flight Sub-Lieuts., all to date May 2nd: R. F. S. Leslie, L. H. Wilkins, R. Young, C. B. C. Williams, H. J. English, F. H. M. Maynard, S. B. Joyce, C. F. Latimer, N. Gregory, G. G. Hedge, J. A. Goodwin, T. I. T. Sloan, and C. H. W. Godfrey.

The undermentioned have been entered as probationary Flight Sub-Lieuts. for temporary service, to date as stated: R. Y. Bush, G. R. H. Talbot, J. MacLarty, E. P. Hardman, S. R. Watkins, B. C. Bell, and C. R. Blagrove, May 2nd; P. A. Watson, April 29th.

\* \* \*

The following appointment was notified at the Admiralty on May 1st:—

Acting Sub-Lieut. J. B. Cole-Hamilton, to the "President," additional, to be lent temporarily to Royal Naval Air Service, to date April 30th.

\* \* \*

The Press Bureau issued the following on April 30th:—

The shelling of Dunkirk is now reported by aerial reconnaissance to have been from land guns, and reports that German warships were off that port were due to a misapprehension.

\* \* \*

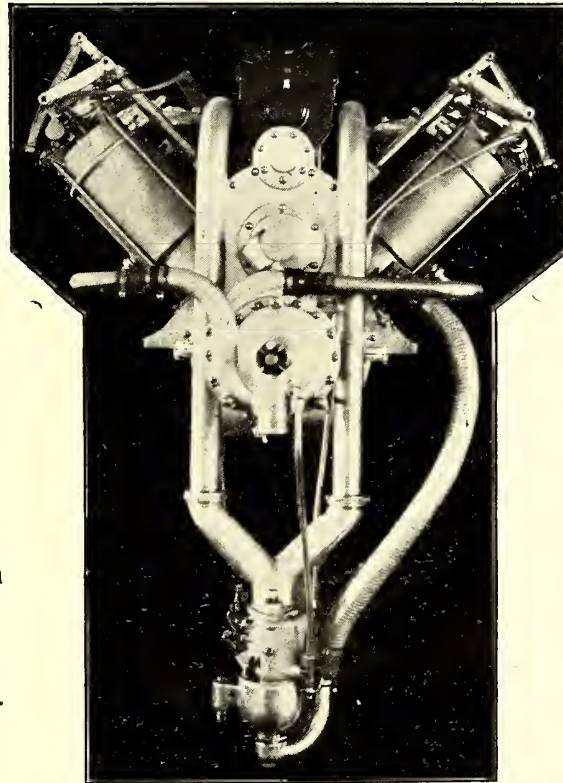
The Secretary of the Admiralty early on May 1st made the following announcement through the Press Bureau:—

# Curtiss Motors

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**HAMMONDSPOUT, N.Y.**

KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.



Position of German gun bombarding Dunkirk, having been verified by aircraft reconnaissance, it was attacked this evening, twelve small and two large bombs being dropped.

A reconnaissance was also made to Ostend, which was clear of all important craft.

A Taube appeared in sight, but kept ten thousand feet up and three miles off.

Naval aeroplanes at once rose in chase, on which it retired immediately.

\* \* \*

An inquest concerning the accident to a seaplane in the Solent on April 26th, in which Flight Sub-Lieut. Stephen Medicott, R.N., and Air-Mechanic Henry Hughes, R.N., lost their lives, was held in Haslar Hospital on the 28th. Evidence was given by Flight Sub-Lieut. Maurice Wright, R.N., that Sub-Lieutenant Medicott was flying over Southampton Water on a Sopwith seaplane. When about 600 feet up the pilot turned slightly, the machine banked, and then began to side-slip, and finally got into a nose-dive. The engine seemed to be throttled down, as if the pilot intended to alight, and the witness suggested that the slow speed of the machine prevented the pilot from regaining balance. Flight Commander Arnold Miley, R.N., stated that it was impossible to recover the bodies until the seaplane had been brought ashore. The machine was practically broken to pieces by the fall, but it appeared to have been in perfect order. It was a new machine, and had been properly tested. He could not tell the cause of the side-slip, but it was probably due to loss of control.

Sub-Lieut. Medicott was formerly a cadet in the Navy, and joined the R.N.A.S. at the beginning of this year. He had made numerous flights on similar machines. A verdict of accidental death was returned.

Flight Sub-Lieut. Medicott was born at Polterne, Wilts, on May 22nd, 1892, and took his certificate, No. 1,066, on a Maurice Farman, at the Central Flying School on January 28th, 1915. He was appointed to the R.N.A.S. on probation on December 14th, 1914.

\* \* \*

The Hon. Maurice Egerton, whose appointment as Lieut.-Comm., R.N.V.R., is noted, is the son and heir of Lord Egerton of Tatton, a Major in the Cheshire Yeomanry, and one of the

pioneers of British aviation. He had a biplane built for him by the Short Bros. at Sheerness in 1909, and has flown regularly ever since, in the Isle of Sheppey. In the days when official orders were lacking, he, with Squadron-Comms. McClean and Ogilvie, Lieut. Moore-Brabazon and the late the Hon. C. S. Rolls, were about the only customers of the Short factory, and it is owing to them that the Navy now has that valuable source of supply.

\* \* \*

Mr. D. W. A. Barton, whose promotion from C.P.O. is noted, is a son of Dr. Barton, who was one of the first experimenters with airships in this country. Mr. Barton has been connected with aviation and ballooning for many years, having been for some time with the makers of the Dunne biplanes, and later with Spencer Bros. on balloon work.

#### MILITARY.

The Field-Marshal Commanding the British Forces in France reported as follows on April 30th:—

3. Yesterday a German aeroplane was attacked in the air and fired at by our guns, and was brought down in our lines east of Ypres.

\* \* \*

The Commander-in-Chief, Expeditionary Force, reported as follows on May 3rd:—

2. A German aeroplane yesterday afternoon was chased by one of our machines to within rifle range of our trenches, and was then brought down by fire.

\* \* \*

The following passage in the descriptive account, which has been communicated by an Eye-Witness present with General Headquarters, continuing and supplementing the narrative published on April 29th, deals with aircraft:—

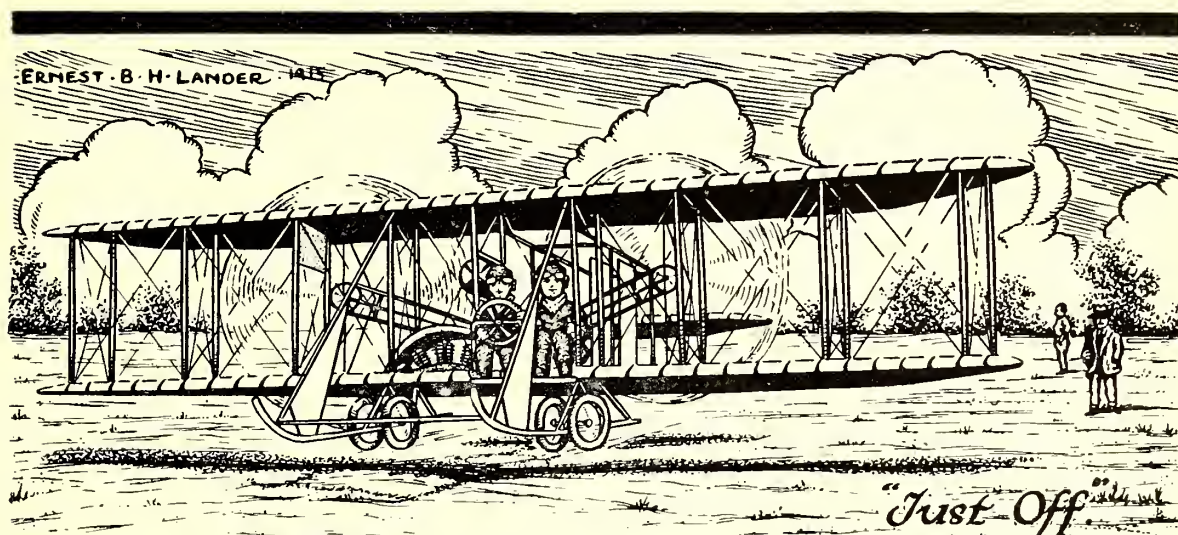
April 30th.

On Saturday morning (April 24th) just about dawn an airship appeared in the sky to the east of our line at this point and dropped four red stars, which floated downwards slowly for some distance before they died out. When our men, whose eyes had not unnaturally been fixed on this display of pyrotechnics, again turned to their front, it was to find the German trenches rendered invisible by a wall of greenish-yellow vapour, similar to that observed on the Thursday



A Kite-Balloon ascending from the Grounds of a Chateau at X—. (Deletion by Indigenous Censor.)





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afternoon, which was bearing down on them on the breeze. Through this the Germans started shooting.

On the 28th a hostile aeroplane was forced to descend by our anti-aircraft guns. On coming down in rear of the German lines it was at once fired upon and destroyed by our field artillery. Another hostile machine was brought down by rifle fire near Zonnebeke.

Splendid work has been done during the past few days by our airmen, who have kept all the area behind the hostile lines under close observation. On the 26th they bombed the stations of Staden, Thielt, Courtrai, Roubaix, and other places, and located an armoured train near Langemarck, which was subsequently shelled and forced to retire. There have been several successful conflicts in the air, on one occasion a pilot in a single-seater chasing a German machine to Roulers, and forcing it to land.

The raid on Courtrai unfortunately cost the nation a very gallant life, but it will live as one of the most heroic episodes of the war. The airman started on the enterprise alone in a biplane. On arrival at Courtrai he glided down to a height of 300 ft. and dropped a large bomb on the railway junction. While he did this he was the target of hundreds of rifles, of machine guns, and of anti-aircraft armament, and was severely wounded in the thigh. Though he might have saved his life by at once coming down in the enemy's lines he decided to save his machine at all costs, and made for the British lines. Descending to a height of only 100 ft. in order to increase his speed, he continued to fly and was again wounded, this time mortally. He still flew on, however, and without coming down at the nearest of our aerodromes went all the way back to his own base, where he executed a perfect landing and made his report. He died in hospital not long afterwards.

[This memorable story refers, of course, to the late Mr. W. B. R. Moorhouse, whose death is recorded elsewhere in a note written before the Eye-Witness's dispatch was published.—Ed.]

\* \* \*

The following casualty in the Expeditionary Force was reported from General Headquarters under date April 26th:—  
**KILLED.**

Polehampton, Sec. Lieut. F. W., Royal Flying Corps.

\* \* \*

The following casualties in the Expeditionary Force are reported from General Headquarters under date April 27th:—  
**DIED OF WOUNDS.**

Moorhouse, Sec. Lieut. W. B. R., Royal Flying Corps.  
**WOUNDED.**

Hawker, Lieut. L. G., Royal Flying Corps and Royal Engineers.

\* \* \*

The following casualty in the Expeditionary Force was reported from General Headquarters under date April 29th:—  
**WOUNDED.**

Parker, Sec. Lieut. L., Royal Flying Corps.

\* \* \*

The following appeared in the obituary columns on April 29th:—

**POLEHAMPTON.**—Killed in action, near Ypres, April 26th, Second Lieut. Frederick William Polehampton, Royal Flying Corps, the dearly loved son of the late Rev. Edward Polehampton, rector of Hartfield, Sussex, and Mrs. Polehampton, and dear husband of Kitty Polehampton.

F. W. Polehampton was born at Hartfield, Sussex, on June 14th, 1873, and took his certificate, No. 914, on a Grahame-White biplane at Hendon on January 28th, 1915. In the early days of the war he obtained a commission in the 14th Reserve Regiment of Cavalry, and was attached to the 15th Hussars, but later was appointed to the R.F.C. with seniority of January 1st, 1915.

He was a fine specimen of the English sportsman. Originally intending to be an engineer, he spent some time at the Crystal Palace Engineering School, where he won a reputation as an athlete. He was one of the few well-to-do young men who took up cycling as a sport, and he did several very fine performances in 1893, including one ride of over 200 miles in

12 hours. Having ample means he later took to horse-racing, and was fairly fortunate in this branch of sport also.

Though disqualified by age and lack of military training for military service, he, nevertheless, gave himself to the country's work in the finest sporting spirit, when he was entitled to stay at home and take up some more peaceful duty. Many will mourn his death.

\* \* \*

The following appeared in the obituary columns on April 30th:—

**RHODES-MOORHOUSE.**—On Tuesday, April 27th, of wounds received while dropping bombs on Courtrai the day before, William Barnard Rhodes Rhodes-Moorhouse, Second Lieutenant Royal Flying Corps, aged twenty-seven, dear elder son of Mr. and Mrs. Edward Moorhouse, of Parnham House, Dorset, and most loved husband of Linda Rhodes-Moorhouse.

The manner of the death of W. B. R. Moorhouse is one of the finest things in the history of the war. It was he who destroyed with bombs the railway at Courtrai on April 26th, as mentioned in Sir John French's dispatch. After doing so, and just as he was making for home, he was hit by a bullet, which passed right through the lower part of his body. Though mortally wounded he stuck gamely to his task, and though he must have been on the point of collapse all the way, he flew over thirty miles to the landing ground of his squadron, where he alighted, to all outward seeming without damage. He retained sufficient strength to report what he had done and seen, and then he died, like the plucky little sportsman he has always been.

He was born in London on September 26th, 1887. To all who knew him, and to many who did not, he was always "Bill" Moorhouse, and the familiarity bred no contempt, but rather indicated the affectionate regard in which he was held. He was one of the finest car drivers who ever held a wheel. His nerve, eye, and judgment were wonderful. Also, he was a more than ordinarily good mechanic, and a clever designer of really useful methods of increasing the comfort and efficiency of cars and aeroplanes.

As an aviator he was one of the pioneers. In 1910 he worked as a mechanic with Mr. Radley at Huntingdon, and at the aviation meetings at Bournemouth and Lanark. Later he went to America with Mr. Radley, on the occasion when the latter flew over San Francisco. On his return, Mr. Moorhouse himself took to flying, and did many splendid performances on Blériot type monoplanes built in partnership with Mr. Radley, and known as R. and Ms. He took his certificate, No. 147, on one of them at Huntingdon, the certificate being granted on October 17th, 1911. At that period he was probably the finest cross-country flier in this country, and quite the equal of anyone abroad.

He will, however, go down to posterity as the first man who ever switched off his engine and deliberately stalled his machine simply to see what would happen. It was a splendidly daring thing to do, for at that time no one knew anything about stability, and he was merely backing his opinion of his own theories formed as the result of practical experience as an aviator and a mechanic. The resultant "tail-slide" turned in due course, as he expected, into a gentle nose-dive, and a perfectly simple landing.

On his marriage in 1913 he gave up flying, and even took to driving quietly on the road. He had everything in the world to make life happy, he was the heir to considerable wealth, the husband of a charming wife, and the father of an infant son, yet, although he might easily have stayed at home and still have been useful, he did his duty as he saw it, and joined the branch of the Service in which he thought he would be of the greatest use, being appointed to the R.F.C. on August 22nd, 1914. Even then, when he might have worked hard, but in bodily safety, as a transport officer, which he did with marked success, or as an inspection or equipment officer, for all of which posts his mechanical talent fitted him admirably, he preferred to take the risks of a flying officer, and as such he gave his life in the King's Service.

To his parents and to his young widow one offers the deepest sympathy, and sincere wishes that his son may grow up to

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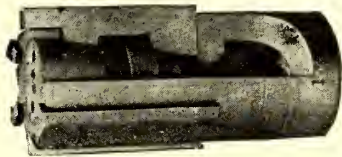
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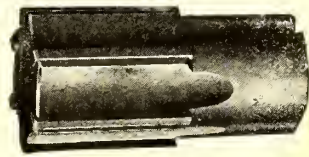
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inherit his father's endearing qualities and to console them in some measure for the loss of one who died as he lived, a sportsman and a gentleman. If Bill Moorhouse had to die young he could not have chosen a finer way of going out.

\* \* \*

One records with great regret that Flight Sgt. William Thomas McCudden, of the Royal Flying Corps, was killed and Sec. Lieut. Norman H. Read, R.F.S., injured in an aeroplane accident at the Fort Grange Military Aerodrome on May 1st. They were flying on a Blériot when the machine apparently side-slipped and dived, smashing badly as it hit the ground. The two occupants were taken to the Royal Naval Hospital, Haslar, where Sgt. McCudden died a few hours later. Mr. Read was reported on May 3rd to be progressing as favourably as could be expected.

\* \* \*

The following extracts from the letter of an officer which appeared in the "Times" of April 29th, describing a journey in a car near Ypres, are of interest:—

"Ahead we could count at least six aeroplanes beautifully bright in the clear air, and from all points the 'Pom!' of the anti-aircraft guns could be heard, and high up a puff of white smoke and then the peculiar moan as the shrapnel shell burst. At least 50 shells had been fired at one machine that was going along at a terrific pace. The whole air was alive with shrapnel shells bursting, and it seemed hardly possible anything could live there. . . .

"As we drew away we could see the great captive balloons round the city and marking the trenches. The captive balloons are sent up to a great height and held and anchored down by a cable, and observers place themselves in them and remain all day. It is not an awfully pleasant occupation, as frequently they get shelled and shot at by rifle fire."

[This is the first mention one remembers having seen of captive balloons being used by the Allies. The French have already quite a fair number of them, built to the Parseval-Siegsfeld designs, so again we are learning from the enemy. It will be remembered that some months ago this paper strongly advocated the use of these "Drachen-Balloons."—Ed.]

AT SEA

Lloyd's Flushing agent reported that a pilot steamer landed there at 3 a.m. on May 1st two German aviators who had been picked up near the North Hinder Light. Their machine, No. 406, was abandoned.

\* \* \*

It was reported from Rotterdam on April 30th that the American steamer "Cushing," which arrived that day, was attacked on April 28th by German aviators, although the name of the ship was painted on both sides in letters 6 ft. high and she was flying the American flag. Two bombs were dropped, but they did no damage. The incident occurred in latitude 51 deg. 45 min. north, longitude 2 deg. 30 min. east, a point which is about midway between the North Foreland (Isle of Thanet) and Flushing.

It is not stated how an aviator flying at a height of presumably 3,000 feet or so, is expected to see letters or flags which are vertical to his line of vision, or, indeed, how he would distinguish them at that height even if they were laid out horizontally.

#### FRANCE.

The following official note was issued in Paris on April 28th:—

"During the 27th our aeroplanes dropped 32 shells on the station at Bollwiller, and 60 shells on the station at Chambley, where they set fire to an ammunition store. The station at Arnayville, and the junction from Chambley and Thiaucourt were bombarded by night.

"On the 28th one of our aeroplanes dropped 6 shells on the dirigible sheds at Friedrichshafen. The pilot saw a cloud of smoke from the roof of a shed.

"Twenty-one shells were dropped on the station, bridges, and works at Leopoldshöhe. During this bombardment one of our aeroplanes fell in the German lines.—[See the German communiqué.—Ed.]

"During the day four German aeroplanes were pursued

and hit by our aviators. One fell in flames in the enemy's lines near Brimont, and two others came down near our trenches—one in Champagne and the other in the region of the Ancre—and were destroyed by our artillery. The fourth landed in our lines at Muizon to the west of Reims. The two German aviators, who were unwounded, were taken prisoners."

\* \* \*

The afternoon communiqué of April 29th says:—

The enemy's aeroplanes have bombarded the open town of Epernay, which is exclusively occupied by ambulance and hospital units.

Precise information has been received that the Zeppelin which a week ago dropped bombs on Dunkirk, after having been badly hit by our artillery and completely disabled, was wrecked among trees between Bruges and Ghent.

\* \* \*

The communiqué of April 30th says:—

One of our dirigibles bombarded the railway lines and the sheds in the region of Valenciennes.

One of our aeroplanes, which was destroyed by an explosion, came down in the enemy's lines.

\* \* \*

The communiqué of May 1st says:—

One of our aeroplanes, which flew over Sommepey this morning, was struck by a fragment of a shell which made a hole in the petrol tank. The aeroplane succeeded, however, in getting back to our lines after passing over the first German line at a height of only 400 metres. The machine was riddled with bullets during this difficult passage, and when it landed it was subjected to the fire of the German artillery. The aviators escaped unhurt.

\* \* \*

The communiqué of May 2nd says (apropos the big gun which has been bombarding Dunkirk):—

Nine shells only having been fired in the second and last bombardment, there is reason to think either that the gun was damaged by the class of fire which the most powerful guns cannot long withstand, or that the continued flight of our aviators in that region resulted in stopping its fire.

\* \* \*

It is reported through devious channels that M. le Lieutenant Garros was captured at Huft, near Landelede, on April 18th. It is said that he descended within 120 ft. of a train and dropped several bombs, damaging both the rails and the locomotive. He was fired at, but not hit, and safely headed for home. However, by the time he had got to 2,500 ft. his engine stopped. He landed, burned his machine and hid in a cottage, where he was finally discovered by the Germans.

It is reported that he is now detained at Magdeburg.

\* \* \*

According to a message from Paris three Taubes flew over Dunkirk on the 28th, one at 6 a.m., one at 1 p.m., and the third an hour later. They caused insignificant damage to property. No one was injured.

\* \* \*

A message to the "Temps" from Nancy says that a German aeroplane dropped three bombs on the town, killing three persons and injuring six.

\* \* \*

The "Petit Parisien" reports that recently four British aviators raided St. Quentin and destroyed a German magazine. Nineteen men of the Guard were killed. The next day the aviators destroyed some railway goods sheds and a large portion of the line.

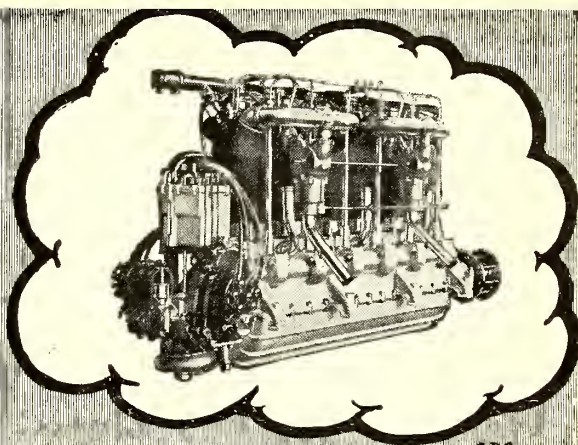
\* \* \*

It is reported that during a recent raid by Allied aviators on the headquarters of the Prince of Württemberg's army, one of the wings of the building was demolished, mortally wounding General von Garnreich, and killing two lieut.-colonels. It is also said that the Prince himself narrowly escaped being killed.

\* \* \*

According to a message to the "Petit Journal" from Châlons-sur-Marne, Lieut. Mingal and Capt. Marin, were killed in an accident near La Croix-sur-Meuse while on reconnaissance.

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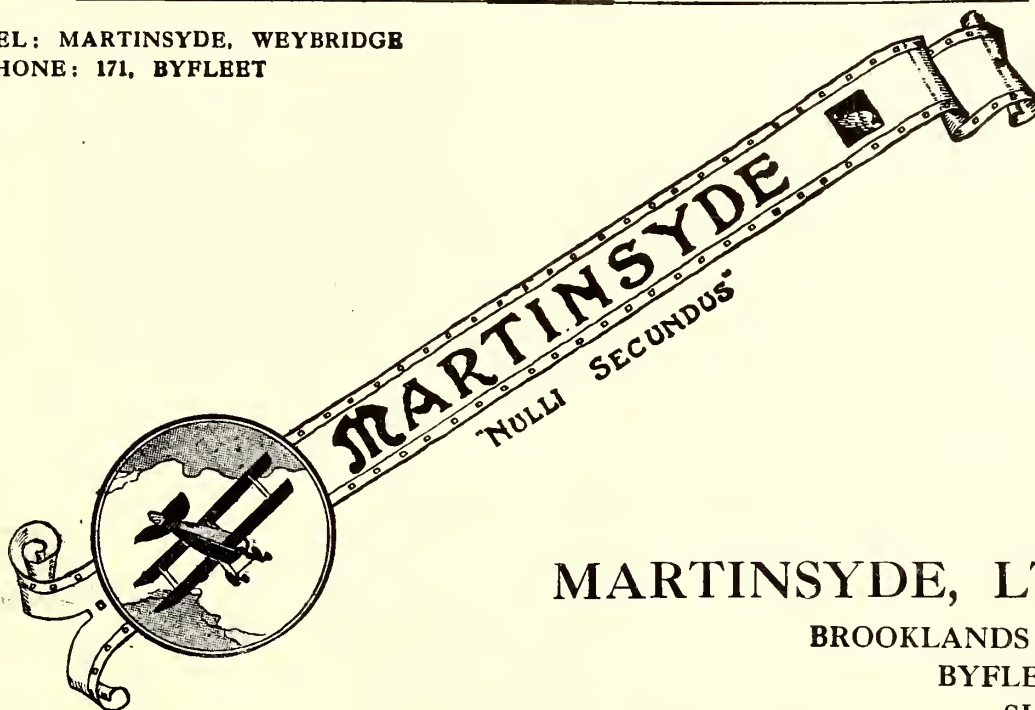
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Writing of our repulse near Ypres, the correspondent of the "Morning Post" says:—

"Prior to the opening of this great fight an ingenious German reconnaissance was thwarted by the alertness of the Canadian gunners. Three British aeroplanes were observed to be hovering on and off the lines. They were fired at by the Germans, but a Colonial artilleryman remarked that either the German gunners had become woefully bad shots or else they were not really trying to hit them. He reported this, and orders were given to fire on the suspicious aircraft. One was brought down. It was certainly a British model, but mounted by two Germans. Immediately after this incident the enemy attacked."

[It must be remembered that the Germans have in their possession several British aeroplanes of the latest type, which their pilots had no time to destroy on being brought down in German territory. These may have been used by German pilots, or they may have been copied by German makers. Also, one must remember the note by our Danish correspondent last week concerning Dr. Hansen having brought over drawings of the Bristol Scouts, which are now being built at Cologne.—Ed.]

The "Morning Post" correspondent continues:—

"Again the aerial activities of the enemy have been renewed. Aeroplanes have visited Amiens, timing their visit to coincide with the great civic funeral that was being given to the victims of the last deadly raid. They threw six bombs, all of which, however, fell in gardens, doing no damage.—[This reads like nonsense. Is it likely that the military duties of aircraft would be upset on purpose to interfere with a funeral, even if the Germans knew the exact date and hour on which it was to take place?—Ed.] A Zeppelin visited Calais in the early hours of yesterday morning (April 26th), and threw a number of the new bombs that they are using of greatly increased power. A considerable number of casualties occurred among civilians, estimated, I understand, at thirty. Civilians have all been removed out of Ypres and Poperinghe."

[This last sentence should be read in connection with a brief statement in the same paper, which somehow escaped the Censor, to the effect that the Germans by their advance on the occasion captured more ground than any belligerent has captured on the Western front since the winter campaign began. In other words, their advance was greater than our costly business at Neuve Chapelle. The removal of civilians from Ypres and Poperinghe, which have hitherto been fairly safe areas, indicates the extent of that advance. It is, however, comforting to know that our troops have won back nearly all the lost ground, and may, by the time these notes appear, have advanced beyond their original positions. In these magnificent counter-attacks the R.F.C. has done splendid work in damaging the railways necessary to bring up German supplies and reinforcements.—Ed.]

#### GERMANY.

A telegram to Amsterdam from Stuttgart on April 27th reports the following announcement by the Minister of War:—

"In the forenoon a hostile biplane coming from the west flew over Oberndorf (Württemberg), dropping four bombs, all of which landed in the arms factory. The aviator was fired at by machine guns. Six civilians were killed and seven wounded. The material damage was slight, and the work of the factory was not disturbed. The aviator escaped."

\* \* \*

The official communiqué of April 28th says:—

Near Altkirch one of our aviators brought down a French aeroplane.

\* \* \*

Near Cornay, east of the border of the Argonne, a hostile aeroplane fell down, the pilot being killed.

Coast fortifications at Harwich were bombarded last night.

\* \* \*

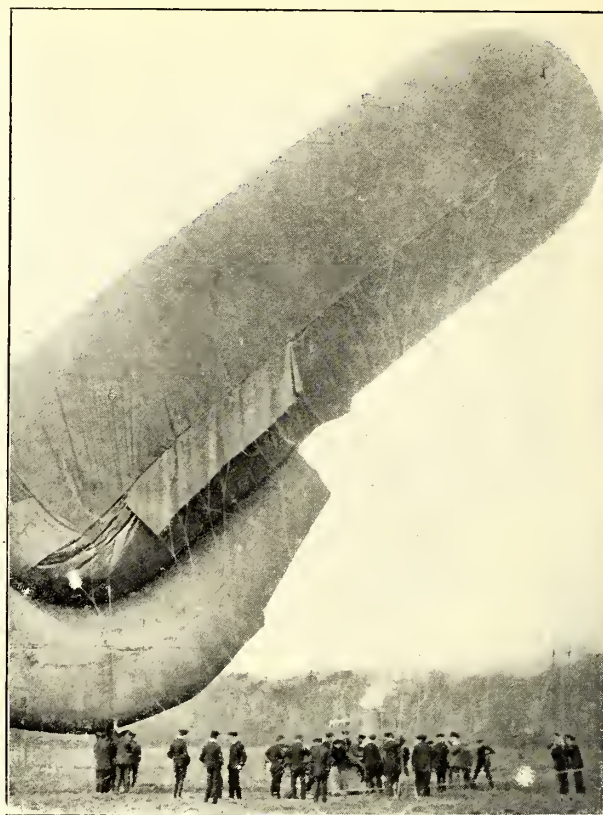
The communiqué of April 30th says:—

On the coast enemy airmen are displaying great activity, causing considerable damage to houses at Ostend.

\* \* \*

The communiqué of May 1st says:—

On Thursday, Reims was bombarded with some shells as a reprisal for the French bombardment—[Presumably by aircraft.—Ed.]—of our resting places behind the front. As the



A French-built Kite-Balloon at rest.

enemy well knows the meaning of our attack it would be easy for him to save Reims from further bombardment.

The enemy yesterday lost three aeroplanes. A British machine was shot down south-west of Thielt, another aeroplane near Wieltje, north-east of Ypres, and a third was forced to descend from a hostile air squadron near Niedersulzbach, in Alsace.

\* \* \*

The communiqué of May 2nd says:—

Yesterday, again, two French aeroplanes were disabled—one was destroyed by shooting near Reims, and the other, belonging to an air squadron, was forced to land north-west of Verdun.

\* \* \*

The communiqué of May 3rd says:—

A French aeroplane yesterday landed near Hundlingen, west of Saargemünd. Both the occupants were taken prisoners.

With apparently good results, a German air squadron yesterday attacked an aeroplane shed at the railway station at Epinal.

\* \* \*

A telegram from Friedrichshafen to Amsterdam on April 28th states that the same morning a hostile aeroplane approached the town from the west. He dropped six bombs, two of which caused insignificant damage. One man was slightly wounded. The aviator escaped towards the east.

\* \* \*

The "Lokalanzeiger" reports that the armament factory at Stuttgart, on which a French aviator dropped bombs on the 27th inst., is a Mauser rifle workshop.

#### RUSSIA.

The following semi-official communiqué was issued at Petrograd, April 26th:—

At 6 a.m. the Black Sea Fleet approached the Bosphorus. At 8 a.m. the vessels opened fire . . . against the forts and batteries. As a result of the bombardment great explosions were observed in the forts. . . . Observations made by hydro-aeroplanes showed the accuracy of the fire of the squadron.

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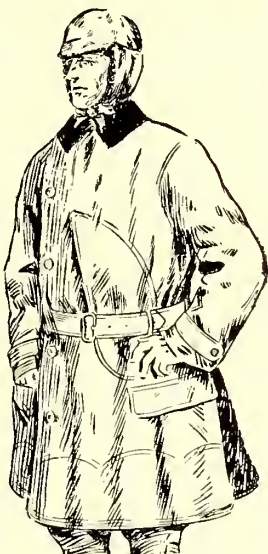
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The communiqué of April 27th says:—

Our Ilia-Mourametz aircraft successfully dropped bombs on German aeroplanes at an aerodrome near the village of Sanniki. During the day we damaged and captured two German and Austrian aeroplanes.

\* \* \*

The Petrograd correspondent of the "Morning Post," whose cocksure style irritates at times, does, at any rate, know the difference between an airship and an aeroplane. Therefore, the following note in his article dated April 27th is of interest:—

"In retaliation for the serious damage done by several Russian 'Dreadnought' aeroplanes on the railway communications near Soldau the Germans on Sunday sent a Zeppelin as far as Bielostok, the junction of five main lines. The airship dropped several bombs upon the town without causing any losses."

The reference to "Dreadnought" aeroplanes confirms our suggestion last week that the "Ilia-Mourametz" has been adopted as a type by M. Sikorski.

#### BELGIUM.

The communiqué, dated April 28th and signed by the War Minister, which was issued from the Belgian Legation on April 29th, says:—

Our aviators have shown great activity.

#### ITALY.

Below are some eulogies on our Air Services taken from the "Italian Aero League" monthly, apropos the co-operation of aircraft in the Allies' attack on the Dardanelles.

After pointing out the added difficulties faced by the R.N.A.S. in working from new and temporary bases, floating and otherwise, and yet winning new laurels under such conditions, the writer says:—

"From the Cologne raid to these operations in the Dardanelles has been a continuous sequence of triumphant events which places British aviation far beyond any other Air Service in the belligerent forces, and tells of admirable preparation—without worthless panegyrics—accomplished under a far-seeing Government by the aid of capable designers, a hard-working trade, and the self-denial of their naval men—this latter always a strong point and one to which that Service owes much of its past."

Profiting by her neighbours' costly experiments, Italy is making desperate efforts to add to her aeroplanes. Her big Voisins are now "faits accomplis," and both Parasols and sea-planes and motors are being pushed on by every means possible.—T. S. H.

#### HOLLAND.

The "Morning Post's" man in Holland reported on May 3rd that on the 2nd a German balloon from the Field Artillery Shooting School, near Berlin, appeared above Zeeland, coming from the direction of German positions in Belgium. He says: "The balloon was fired at and brought down by Dutch soldiers near Aardenburg. There was no pilot in it." Obviously a "break-away" captive or an escaped practice balloon.

The "Telegraaf" (Amsterdam) reports that about 9.30 p.m. on May 1st two hostile aeroplanes appeared over Essen. It is supposed that they wished to attack the powder factory about an hour's journey from Essen. Directly they were above the factory they were fired at, but not hit. It is said that no bombs were dropped.

#### SWEDEN.

On April 22nd the Naval Minister at Stockholm issued an order detailing the organisation of the newly decided aviation corps. After referring to the importance of the "fourth arm" in modern warfare, the Minister states that the best state of efficiency can be obtained by placing the flying corps on a fairly independent footing. Aviation stations are to be established along the coast with a dépôt at Stockholm. Each station will have three airships, two of which will be always ready at mobilisation and one in reserve. All other flying material will be kept at the dépôt, where will also be the repair shops.

The Commandant of the flying corps will be subject only to the chief of the Naval Staff, and questions of organisation and mobilisation will be decided by the Staff. All technical matters will be handled by the Naval Engineering Staff to which the

Commandant will be co-opted. Appointments to the dépôt or stations will be made by the Staff, appointments of flying officers by the King. Flying officers will be selected from volunteers and for nominations by the Commandant. They must have three years' service, be under 35 years of age, and pass medical and flying examinations. In the event of there being insufficient candidates qualified civilians may be appointed, who will receive rank and pay of sub-lieutenant.

Observers will be appointed under the same conditions as flying officers, but will not be required to pass a technical examination. They must instead pass in photography and signalling.

Machinists will be appointed from candidates from petty officers and engineering machinists and will sign on for four years.

Voluntary contributions in Swedish schools have raised a sum of Kr. 200,000 which has been presented to the Naval Department for the construction of airships.—A. P.

\* \* \*

It is reported from Linköping (Sweden) that in an aeroplane accident at Malmstaett on May 1st, Lieut. Silow and his passenger Lieut. de la Gardie were injured. Lieut. Silow died in hospital.

#### SERBIA.

The following communication was published at Nish on May 1st:—

"On the morning of the 28th ult. our aviators were engaged in a quick-firer contest with hostile aviators. At 6 a.m. a hostile aeroplane was seen coming from Bejanja and going towards Palanka. One of our aviators reached the hostile aeroplane above Smederevo, and opened fire at about 100 metres. The hostile aeroplane declined to fight, and crossed the Danube, after firing two shots without effect.

"Two hours later another hostile aeroplane appeared from Palanka. Our machines soon chased it into Austria. This first engagement in the air clearly shows the superiority of our aviators."

[One assumes that the Serbians are using French aeroplanes, possibly with French pilots.—Ed.]

#### TURKEY.

An official communiqué issued in Constantinople on May 3rd, referring to operations in the Dardanelles, says:—

A hostile hydroplane, flying over the Gulf of Alexandretta, was damaged by our fire, and fell into the sea, where it was picked up by a cruiser navigating in those waters.

#### EGYPT.

The following statement was officially issued at Cairo on Saturday, May 1st:—

On the night of the 28th/29th April a small mixed force was sent out from Ismailia to endeavour to surprise the enemy's camp. The enemy, however, had moved during the night towards Fordan, but finding all our posts on the alert they retired to Bir Mahadat. They were located again at dawn by our aeroplanes, and about mid-day our cavalry succeeded in coming up with their rearguard, harassing their retreat, and taking a few prisoners.

\* \* \*

A message to the "Times of Ceylon" from Egypt, reprinted by the Australian "Ballarat Courier," states that all the pilots employed in aerial reconnaissance in that country are French, while all observers are English officers specially picked and trained from the Ceylon contingent.

\* \* \*

From the "Times of Ceylon," March 10th:—"J. G." writes from on board the Biddy s.s. "—" in the Suez Canal:—"... We had details of Lieut. Partridge's death. He had joined the Flying Corps and had gone with a French officer to reconnoitre. The aeroplane landed disabled at some distance from the camp. He decided to leave the aeroplane and walk to camp. On the way they were challenged by a squad of Indian troops, who had strict orders to shoot any stragglers who could not give the password. When challenged the officers answered 'Friend,' but could not give the counter-sign, and as they persisted in going forward they fell riddled with bullets. Such is the fortune of war."

[It will be noted that this confirms the German story from our Danish correspondent.—Ed.]

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**BRITISH EAST AFRICA.**

The following appeared in the "Leader of British East Africa" of April 3rd:—

"To the Editor of the 'Leader':—Sir,—Last year Major the Hon. R. F. Carnegie, on his return from England, gave us an account of how he presented the Home Government with £1,000 from this Colony for an aeroplane. I think we all pretty well understood in what spirit the gift was received. So far as I know there was never any official acknowledgment of the money, and the Home Government never even troubled to tell us in detail the exact way the money was spent, if, indeed, it has been spent.

"It seems to me that if some influential person here now opened a fund to raise £1,250 (a sum surely well within our means in these patriotic times) this Colony might then forward it home and fairly claim to have given the Motherland a complete modern aeroplane, as quoted below.

"After all, an aeroplane in these days is of inestimable value at the front, a fact which this Colony fully realised over a year ago, although we got no thanks for that.

"We have never heard that the former £1,000 was ever spent. Could we not assume that it may still be there, and add just another thousand to it, giving England something of real value and England's Government another chance to find its manners?

(Signed) JOHN MARTIN.

"Tugernon Hill, Lumbwa, March 27th, 1915."

(ENCLOSURE.)

Patron, His Majesty the King,

Overseas Club Headquarters,

General Buildings, Aldwych, London, W.C.

The Overseas Aircraft Fund, as already announced, has been inaugurated for the purpose of presenting to the British Government one or more aeroplanes for the use of the Royal Flying Corps. The scheme has the approval of the Army Council, while the Secretary of State for the Colonies writes: "Your scheme seems such a good one that I venture to wish it every success." The latest type of Vickers gun biplane, complete with gun, costs £2,250, and these machines, which are the latest word in aircraft, can be obtained for immediate delivery.

We appeal to readers of "The Times Weekly Edition" to assist in maintaining the British mastery of the air by subscribing to our fund. No contribution will be too small. Every donation received will be acknowledged by return. Donations should be addressed to the Organiser, Overseas Club (Aircraft Fund), General Buildings, Aldwych, London, W.C. Cheques should be crossed, "Coutts and Co." If sufficient funds are forthcoming it is hoped to present one aeroplane from Canada, one from British West Indies, one from South Africa, and so on.

[NOTE.—The same paragraph sent us by Mr. Martin had also attracted our attention, exhibiting a remarkable commentary on official methods. The settlers of B.E.A., by Major the Hon. R. F. Carnegie's suggestion, anticipated the Imperial wants in the aeroplane line in providing a voluntary gift of one to the Service. One thousand pounds sterling were raised here in a very short time for the purpose. The movement for some occult reason received no recognition, encouragement, or support from Government here. Nor apparently was anything done by the local Administration to further the object of the patriotic gift in London. The money was sent home, and no official acknowledgment has as yet been received. To-day we have them shouting at home for aeroplanes! There is no doubt that a tactical blunder has been committed, and at the earliest occasion we hope to have the matter thrashed out at the Colonial Office by personal inquiry. We do not think another such patriotic fund for the purpose would appeal to settlers after the cold water thrown upon the earlier movement.—Ed. "Leader."]

**AUSTRALIA.**

In the words of the Melbourne "Argus" (March 10th), "A large military biplane appeared over Melbourne after having 'swept up from Point Cook, where military officers are busily training for their aerial pilots' certificates." After manœuvring for some time the aeroplane faded away in the distance." The

"Herald," Melbourne, states that the pilot of this machine was Dr. George Pinnoch Merz. (See frontispiece, *THE AEROPLANE*, March 31st.)

From the "Herald" (March 12th):—Taking with him Warrant Officer R. H. Chester as passenger, Lieut. G. P. Merz made a flight in a B.E. tractor biplane to Geelong and back in less than 45 minutes. They left the aerodrome at 4 o'clock and travelled over the bay at the rate of 60 m.p.h. When over Geelong, at an altitude of 5,000 ft., which they maintained all the way, the aviators made a double spiral vol-plané and then returned to the aerodrome, keeping over the water all the way. The distance to Geelong by aeroplane is more than 30 miles.

**U.S.A.**

The following appears in the American press in general:—"Tacoma, Wash., April 8th.—15 cars of aeroplanes for use by the Russian Army arrived in Tacoma last night for shipment to Vladivostok on the Japanese s.s. "Hakushu Maru," due in Tacoma to-morrow. There are about 150 aeroplanes, valued at between \$3,000 to \$4,000 each."

[This might be read in conjunction with Mr. Orville Wright's statement: "What nation gets our machines after they leave the factory we don't know." See *THE AEROPLANE*, April 14th, p. 359.]

\* \* \*

From the "New York Times."

The Burgess Co., of Marblehead, Mass., has received an order for three hydro-aeroplanes for the Navy (U.S.). The contract price for the machines is \$11,500 each.

\* \* \*

First Lieuts. T. Dewmilling and Byron, Q. Jones, and eight enlisted men, with an aeroplane from the army aviation school at San Diego, have been ordered to Brownsville, "down Texas way," to aid in the enforcement of neutrality at that part, during the fighting across the Rio Grande at Matamoros. Because of the circuitous course of the river between Brownsville and Matamoros and the heavy growth of vegetation along the river bank, an aeroplane, in the opinion of army officers, affords the best means of patrolling this section of the border. The expedition is already on its way from San Diego.

\* \* \*

Dr. Creil M. Peoli, a Los Angeles aviator, was killed on a machine of his own construction at College Park, Md., on April 12th. He was 22 years of age and a Cuban by birth. His machine, said to be the largest ever constructed in America—having a span of 47 feet—was fitted with a 12-cylinder 150-h.p. motor.

\* \* \*

Mr. Vincent Astor has purchased a 100-h.p. Burgess-Dunne hydro-aeroplane (the "N.Y. Times" says "flying-boat"). Its trials are to take place on the Hudson River. Mr. Astor has built a floating hangar at Newport, where he intends to use the machine for pleasure this summer. The purchase of this machine marks Astor's first active interest in flying. He has been a member of the Aero Club of America for some years but has hitherto only exhibited a passive interest in aviation.

This machine does not appear to be a new one, as the "Times" states that it is the first to be built under Dunne licence.

\* \* \*

From "New York Times":—

Greenwich, April 15th.—Capt. Janney, of the Royal Aero Corps of England, who returned recently from active service, has purchased from Clifford B. Harmon a Farman biplane equipped with a Gnome 80-h.p. (80-h.p. in this account, not 50 h.p., as published in *THE AEROPLANE*, April 21st) motor, which has lain idle for nearly three years. Capt. Janney, Lieut. Leigh and workman have been busy for several days in getting the machine ready for shipment to Toronto, where Capt. Janney has an aviation school. The pupils at the school are drilled for active service.

[It seems nearly time that "Captain" Janney became known in Canada and the U.S.A.—Ed.]

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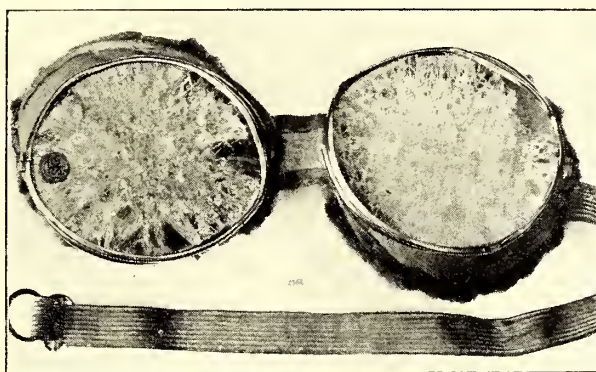
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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.



### The Invasions of England.

Another invasion of England took place in the early hours of April 30th. About 12.20 a.m. a Zeppelin, or an airship of some kind, visited Ipswich and dropped bombs, two of them explosive and three incendiary. The latter burnt down two small houses in Brookshall Road, and damaged a third. Bombs were also dropped in Waterloo Road and at Whetton, three miles out. No persons were killed or injured, but a policeman near one of these houses was seriously startled, firstly, by the sound of engines, and, secondly, by the dropping of a bomb near him.

The same airship, apparently, went as far as Bury St. Edmunds, and dropped four or five bombs. One set a shop on fire, another fired a stable, the others missed houses, though one fell in an alleyway between two cottages. A resident in one of them did a very plucky thing in rushing out and pouring a bucket of water over the blazing bomb, which, for all he knew, might have been on the point of bursting—for one could not expect him to know the difference between an incendiary bomb and any other. The shop fire spread to other shops, and in one of them a pet dog expired, this being the only fatality.

On the evening of April 30th assorted aircraft were seen off the Suffolk Coast, a lifeboatman at Wells-on-Sea reporting "four large bodies" about eight miles from land. It was also reported from Lowestoft that British aircraft went up and sighted an airship which turned and disappeared seaward in the haze. Elsewhere, it was reported that an airship which was supposed to be a German invader turned out to be a British craft. With acknowledgments to the "Observer," one may remark that this method of "Suffolkation" does not appear to be as effective as the use of chlorine gas bombs in land warfare.

A German aeroplane apparently from Belgium was sighted over Dover early on May 3rd. Anti-aircraft guns opened fire, and the machine disappeared. It was at a great height and did not drop any bombs. The firing was heard at Folkestone, and news was received by telephone that the machine had passed Dover and was flying towards Folkestone. The aeroplane did not come over Folkestone town, but kept high up to the north-east, and disappeared. It was subsequently stated that it was not a German but a British aeroplane, which seems more than probable. Some day one of those anti-aircraft guns will hit something or someone, and then there will be trouble.

### FROM DENMARK.

The Danish correspondent of THE AEROPLANE writes as follows:—

A reader of "Flugsport," who partook voluntarily in the Turkish January advance towards the Suez Canal, has sent the paper the following report: "As will be remembered, the Turkish undertook an advancing movement towards the Canal with about 1,000 men, first to learn the strength of those forces which the English had gathered there, second to try whether it should be possible altogether to cross the desert with a big army, and especial ordnance, by help of the present means. The only one aviator conferred upon the Turkish troops damaged his aeroplane already in Aleppo, whereas the English aviators were very busy. In December the Turkish had seized the first English aeroplane in the neighbourhood of Akaba; it was a seaplane, which was forced to land by unknown reason in the desert and found left by the Beduins. [This was the Nieuport seaplane piloted by Quarter-Master Grall of the French Navy, which was wrecked in the desert.—Ed.]

"When we advanced within 75 km. of the canal, a hostile aviator appeared, dropping three bombs, however without getting any mark; I shall tell at once that the aviators always kept at a height of 1,000 to 1,500 metres.

"On January 25th the advanced guard was some 30 km. off the canal, when a hostile aviator paid a visit, and, this time, through dropping a bomb wounding two men and killing one camel. Already the next day an aerial bomb fell again in a smaller camp and the same aviator flew even on to the head camp, 50 km. off the canal, where I was stationed. He flew a Maurice Farman biplane with front elevator and

dropped three bombs, causing however no harm; for the bombs penetrated so far into the soft sand that the exploding was of no result, when taking really place.

"According to the stamp on a found aluminium wing the bombs were made by Hale's Patent. For the rest the desert sand was of the same effect to the heavy ship's shells, fired in the battle on the Suez Canal.

"Still on January 27th the aviator intended to pay us a visit, approaching from East and having almost reached the camp, when a sand's storm drifted him off and finally direct blew him off to North East. I should think he was compelled to alight on Turkish domain; the aeroplane was found later by the Beduins, while it is rumoured that both aviator and observer were shot by their own troops in their return walk to the canal. [See the Egyptian report.—Ed.]

"On January 29th a Henri Farman biplane appeared above our camp place, when the train had already been advanced. He described only some circles, then returning, as was repeated on the 31st, when we fired a musketry volley against him in vain. On February 3rd and 4th, when the Turkish tried an attack on the canal, the enemy engaged four aviators, who patrolled above the Turkish positions and directed the English ordnance. In the afternoon of the 4th the Turkish started the retreat and yet one hostile aviator succeeded in wounding two men heavy and one slight by a bomb dropped. On the further return the English aviators kept patrolling, however using themselves of bombs no more."

### R.N.A.S. Comforts Fund.

Cash contributions to the Fund during the past week are: B. G. C., £1; Vickers' Woodworkers (20th contribution), 6s.; W. M. M., 3s.; Belfast Reader, 2s. 6d. These bring the total to £927 12s. 1d.

A further consignment of garments has been sent to H.M. Seaplane Carrier "Ben-my-Chree." An urgent request has been received from Squadron-Commander R.N.A.S., now at the Dardanelles, for 200 Balaclava helmets. Only 127 were available, and Mrs. Sueter sent these off immediately. If any readers of THE AEROPLANE have any of these helmets in hand will they please send them?

Further contributions in cash and kind should be sent at once to Mrs. Sueter, The Howe, Watlington, Oxon. Funds are urgently needed for future calls.

### A Pretty Present.

The King has had presented to him by Mr. William Dunsmore, of Bedlington, a German incendiary bomb dropped on his farm during the recent raid on the North-East Coast. The gift was sent through the Marquis of Tullibardine, to whom Lord Stamfordham has expressed his Majesty's thanks, saying that the King was much interested in having his first specimen of these bombs, and congratulated Mr. Dunsmore on his fortunate escape.

### Congratulations.

The following notice appeared on April 30th:—

BIRCHENOUGH—MESHAM.—On the 29th April, at St. George's, Hanover Square, London, by the Lord Bishop of St. Asaph, assisted by the Rector, the Rev. F. N. Thicknesse, and the Rev. Owen Davies, late rector of Bodfari, Flintshire, William Taylor Birchenough, third son of Mr. and Mrs. William Taylor Birchenough, of The Manor House, Prestbury, Cheshire, to Eileen Moncrieffe Mesham, daughter of the late Captain Arthur Bennett Mesham, Royal Dragoons, and of Lady Curtis.

Mr. W. T. Birchenough is the well-known aviator now with the Aircraft-Mfg. Co., Ltd., and formerly of the Grahame-White Co. Since the outbreak of war he has done much very valuable work in testing the large number of aeroplanes turned out by the Aircraft Co. He is one of the finest fliers in this country and his experience and skill assures that every machine is in perfect tune before it is handed over to the Service.

When at Eton he was a noted cricketer and played in the Eton eleven for two years.

All will wish Mr. and Mrs. Birchenough every happiness.



**Aero-motors: In Kind and Construction.—(Continued)**

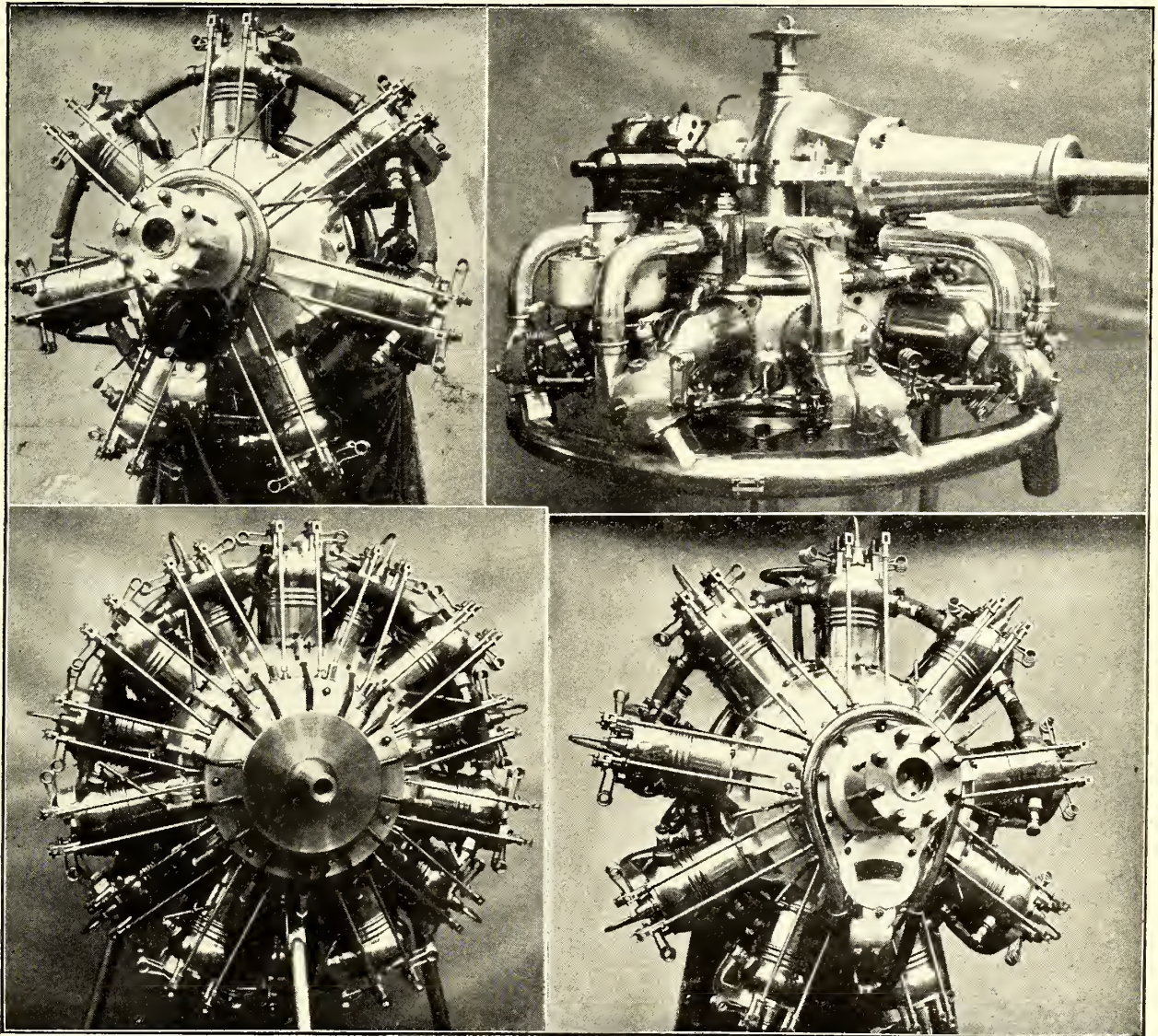
BY GEOFFREY DE HOLDEN-STONE.

Effective lubrication is probably the chief consideration of the internal-combustion motor—or, for that matter, any other prime mover—after it has once been persuaded to run. For it is really the main thing that enables such a motor to keep on running. A minor difficulty—which has mostly to be ignored or made the best of—in the internal-combustion motor is that a good cylinder-oil is by no means necessarily the most suitable for bearings, and vice versa. An oil, for instance, that might serve well enough for steam-engine cylinders—even using highly superheated steam, which will yet find its employment aloft—would probably make but an indifferent graph in a motor cylinder. This accounts, quite as much as the lessened mechanical frictioning surface, for the now general use of ball-bearings, which are just as well lubricated with a good cylinder-oil. Existing conditions, too, practically demand the circulatory re-use of the oil over and over again, as long as it retains any quality—and that is not so long as motorists commonly suppose—so it becomes impossible to use two kinds of oil in a motor.

The question then becomes not so much one of an agreed "*faute de mieux*" principal as of the best system of employing it. The internal direct force feed—or arterial—method of De Dion, Maudslay, Delaunay-Belleville, and one or two Italian practitioners, would be ideal if one could always be certain that the diameters of the arteries, major and minor, were correctly proportioned and related, so that lubrication stopped at being effective, and nowhere became excessive. The doubt on this point is a risk that we cannot afford to take in an aero-motor. We must therefore use some system which enables us to regulate the relative supply to any point or group of points. Therefore it must be, in the main, external to the motor, to be under direct view as well as control, albeit as much of the positive action of forced feed as can be embodied in the system so much the better.

**Lubrication: Always Just Enough.**

Consequently, one finds that the Salmson lubrication system becomes all the more interesting, apart from its mechanical detail, as it happens to explain away the superficial objection



Four Types of Salmson Engine: The 90-h.p. 7 Cylinder, the 300-h.p. 9 Cylinder Horizontal, the 200-h.p. 14 Cylinder, and the 130-h.p. 9 Cylinder.



to the radial type, the risk of fouling the sparking-plugs of the lower cylinders with carbonised excess-lubricant. For one thing, the cylinder trunks project so far into the crank-chamber that any oil lying at the bottom of the latter would have to mount a three-inch wall—with nothing to urge it upwards—to get into even the lowest cylinder. But no oil is allowed to accumulate, for as fast as it drains to the bottom of the crank-chamber it is sucked away by one of the three plungers of the oil pump—which is mounted in front of and slightly below the motor and actuated from the shaft by worm gearing—and driven upwards back to the main oil-reservoir.

Meanwhile, the second plunger is drawing new oil back to the pump, where it is taken up by the third one and forced up—through two leads—to the double sight-feed; from which it drains—again through two leads—into the hollow of the crank-shaft—whence it passes through leads to all working parts, and to the cylinder walls in a fine spray—and to a point immediately above the valve-gearing.

Thus, while all parts are bound to get enough oil by gravity-feed—as the pressure constantly behind it prevents air-lock—this combination of mechanical abstraction and return prevents them getting too much. The returned fouled oil, too, from the crank-chamber, is filtered clean by two layers of linen at the bottom of the oil-reservoir before it is drawn back to the pump. Any excess oil in the sight-feeds is also bye-passed back to the reservoir; and, finally, the volume of the gravity-feed can always be regulated to more or less—as seldom as need be, by the way—by rotating the sight-feed screws in or out respectively to free or restrict the flow.

#### Watercooling Arrangements.

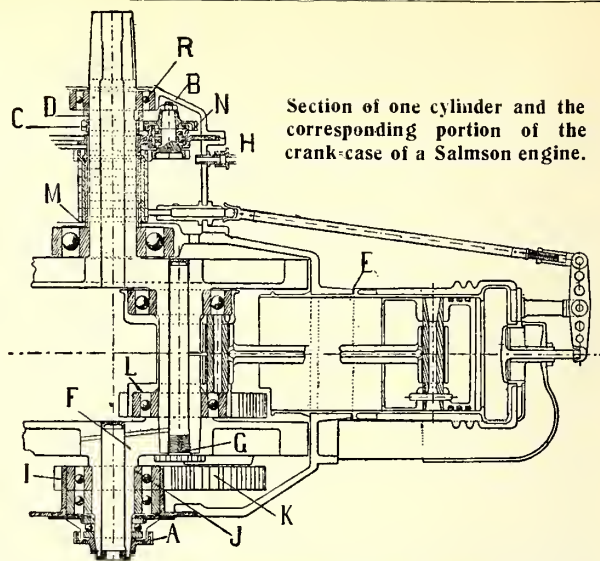
Except that in a physical view, the water-circulation of the Salmson through its cylinder-jacketing is circulation absolute, and therefore as nearly ideal as can be well attained—especially when the entire head of water is above the axis of the motor—there are no uncommon mechanical features about it save one: the presence of a small short-circuit tube between the inlet and outlet pipes to prevent air or steam forming in the latter, and to establish a small head of water at all times above the level of the uppermost cylinder. However, should the nature of the installation not allow the radiators to be placed above the motor, a small tank containing about half a gallon of water is set in the outflow circuit. It is furthermore essential that all connections should be of rubber tubing to damp any vibrations from one cylinder to another through the jacketing.

#### Starting Gear.

Latterly, again, since the larger more powerful types of Salmson motor have been produced, it has been found rather more than merely convenient to employ other means of starting than propeller swinging. Consequently, in addition to the extra starting magneto on the 9-cylinder and larger types—which is connected up in the same way as the ignition on the 7-cylinder model—hand-starting, by a rod and wheel, geared free-wheel fashion with a fixed extra gear-wheel on the tail of the crank-shaft, has been fitted; as well as the system of starting on compressed air: the elements of which are a compressed air-bottle, a starting valve, and an air-distributor formed by a plate rotating at half the motor speed, with as many ports as there are cylinders. Simple enough, and just as reliable as most devices of the sort; which motoring tried and discarded years ago. In any case, involving far more weight than the hand-starter, which renders the pilot just as independent of external assistance.

#### As to Installation.

Finally, one great advantage of the Salmson—and indeed the radial-type generally—is that it can be installed in so many ways. But as the motor is none of the lightest, as stresses other than its own may at any time be imposed on the greater part of the mass—which is but aluminium; and again as the utmost care must be taken to avoid uneven stresses between the front and rear parts, one might suggest the method of caging the crank-chamber transversely between two pairs of steel fish-plates—shorter than its diameter—front and rear, bolted together, with distance-pieces of tubing on each bolt, and each pair of bolts inter-connected by a bracket-piece



Section of one cylinder and the corresponding portion of the crank-case of a Salmson engine.

attaching the whole power-plant to the framework of the aeroplane fuselage.

#### And Dissection.

The problem of the hen's priority or the egg's is always foremost when one comes to the upkeep and maintenance of any motor. Logically, one should start with the original shop-creation egg of complete dismemberment; but that means losing the advantage of all the expert detail adjustments that are discovered, one by one, in the anatomy of the entire bird; adjustments that one wisely keeps unaltered, if only to reason them out as they present themselves.

Noting at all times, then, the anatomical chart which appears above, the first thing is to fit the subject for dissection by stripping away minor—especially delicate—externals before dismemberment. Assuming the motor to be "in frame," so to say, as on an aeroplane, one should begin by disconnecting the smaller and lighter pipings—such as the petrol supply and the lubrication leads, one of which is shown at H—the ignition wiring—with which the sparking-plugs should be removed, each wire having its number duly attached.

#### The Stripping Process.

Then the heavier connections—as for the water circulation, the exhaust and the induction—may follow, for which last the external parts of the valve-gear must be freed, so that the inlet pipes may be dismantled and the cylinders thus freed from the induction hoop as well as from the exhaust manifold. The carburettor can now be removed, to be followed by the pump and magneto bracket at the back of the crank-chamber. Then, after releasing the pinion A which drives the magneto and the water-pump, by slacking off the nut at the coned tail of the crankshaft on which the said pinion is mounted, the motor is ready to be lifted clear. It should then be placed flat on the lower half of the crankcase, taking care that the cylinders do not support the weight anywhere, to avoid risk of denting or straining the thin water-jackets.

The motion parts of the valve-gear come next for removal. To do this the cover B is taken off and the endmost ball race R—which is situated immediately behind the propeller—taken out. The pinion C—keyed to the crankshaft—which drives the intermediate wheels of the valve-timing gear—is next removed by inserting a screwdriver between the pinion itself and the nut D, which drives the pinion by two small keys. When the nut is clear of the keys the pinion may be drawn off endwise. Particular care must always be taken to remove the keys referred to.

#### The Internals.

The distributing gear may then be removed, or wait to be removed bodily with the front half of the crank-chamber. At any rate, all that is needed in this minor dismantling operation is to slack off the seven or nine attachment bolts of the distribution gear casing and rock the whole until the gears unmesh and the parts come free. To withdraw the cams the



roller guides and jumping-pieces must be pushed outwards to the limit of their movement.

Needless to say, the cams should be removed in one with their carrying sleeve and its gear, their relative setting not being disturbed on any account.

The next thing is to slide the crank-chamber forward—that is upward—upon the crankshaft and so obtain further access to the interior of the motor. First remove the spring rings E, which register the cylinders with the crank-chamber, then slack off and withdraw the bolts connecting the two halves of the crank-chamber; and then, by inserting three or four copper wedges between the flanges of the crank-chamber, the front half can be removed with or without the timing gear.

Next in order comes the removal of the cylinders, for which purpose the screw which holds the propeller in place is screwed into the end of the crankshaft, which enables the motor to be lifted a few inches. With a piece of wood or hammer handle a few light blows are then struck on the parts of the crank-chamber between the cylinders. The lower half of the crank-chamber will then drop, freeing the crankshaft, connecting-rods, and the cylinders, which can then be withdrawn.

#### The Final Evisceration.

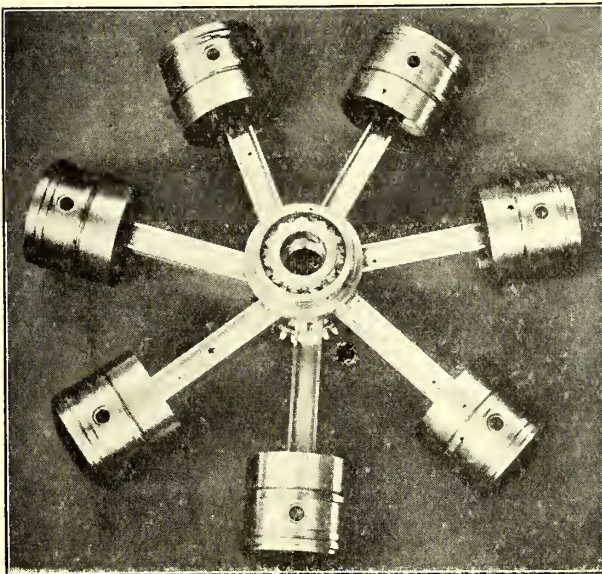
The front portion of the crank-chamber can now be lifted clear from the crankshaft, with the forward ball-race. Pistons and connecting-rods being now fully exposed for dismantling, these, with the backplate, the crankshaft, and its satellite gearing, must be lifted bodily, end for end, clear of the back half of the crank-chamber, and suspended tail upwards, so that the two halves of the crankshaft may be taken apart.

This suspension will bring upwards the fast-nut G, which contains a small locking screw set between two notches and two round keys.

The locking screw having been extracted, and the keys withdrawn, the nut can be taken off to free the halves of the crankshaft, which is done by striking this end of the front half—actually the crank-pin—smartly with a brass rod or piece of hard wood to effect the final clearance, taking care that the striking piece only bears on this end.

The front end of the crankshaft being now taken down and clear, the crank-pin carrier, with connecting-rods and pistons attached, may be readily dismantled. The crank-pins being locked in place, as we have seen, by the two ball bearings which lie at each end, these last should now be taken out and the pins removed by driving them out from the satellite gear end. All that remains is to free the satellites from their spindle, and the motor will then be completely dismantled.

*To be continued.*



The pistons and crank-connections of a Salmson.

## THE GOVERNMENT AND LABOUR.

By an Order in Council, published in a Third Supplement to the "London Gazette" of April 27th last, the following regulation appeared relating to the manufacture of munitions of war:—

The occupier of a factory or workshop the business carried on in which consists wholly or mainly in engineering, shipbuilding, or the production of arms, ammunition, or explosives, or of substances required for the production thereof, shall not, nor shall any person on behalf of the occupier of such a factory or workshop, either directly or indirectly, by canvassing, advertisement, or otherwise, take any steps with a view to inducing—(a) any person employed in any other factory or workshop, being a person engaged on work for any Government Department or otherwise serving war purposes, to leave his employment; or (b) any person resident in the United Kingdom at a distance of more than ten miles from the occupier's factory or workshop, to accept employment therein, otherwise than by notifying vacancies to a Board of Trade Labour Exchange; and in the event of any person contravening the provisions of this Regulation he shall be guilty of an offence against these Regulations.

This rule obviously applies to manufacturers of aircraft and their parts as well as to ammunition works.

The first section is obviously fair to employers and employees alike, as it prevents rich firms from buying men from small firms by paying them exorbitant wages.

The second section is a trifle ridiculous, for surely if a man working in Southampton hears through a friend of a job of his class open on the Clyde he can write and ask whether it is still open. If the Clyde employer says it is, then, according to the letter of the law, he is "guilty of an offence." If the workman at Southampton throws up his job, goes personally to Glasgow, and asks for the job there, no one is guilty. In either case there is nothing to prevent the owner of steam-roundabouts seducing from his employment the best fitter in Government employment, as he has no factory or workshop.

Also, which is important, there is nothing to prevent an aeroplane firm from advertising for hands and signing on likely-looking applicants without asking silly questions about where they worked before and why they left—and it is always better to take a man on his face than on his testimonials.

Also, there is nothing to prevent a man from leaving a job in a workshop employed on Government contracts, taking a job in a motor garage, and then applying for a better job on armament work.

Some people read the regulation as meaning that workshops concerned with "engineering, shipbuilding, or the production of arms, ammunition," etc. to other than Government orders must not seduce men from shops on Government work. What it appears to mean, so far as one can be certain of the meaning of any clumsily drafted official regulation, is that no shop may "pinch" men from any shop doing Government work.

The whole thing reminds one of the two Scots meeting on the Sabbath, and one saying to the other, "Gin it were no the Sawbath, how much wud ye be askin' for yon coo?" The bargain went on till it arrived at "Gin it were no the Sawbath I'd tak' ye'r offer," and they agreed that the money should be paid on Monday, and the cow handed over. Much in the same way a man might interview a foreman and say, "If I was *not* working at Jones' at a shilling an hour, could you find me a job at one and a penny?" Or the foreman might say, "If you weren't working at Jones' could you do with a job here?"

The writer knows personally at the moment of two or three first-class men who are fed to the teeth with their present jobs, and who, according to the letter of the new regulation, are debarred from going elsewhere, or rather other employers are debarred from engaging them. But as soon as they care to chuck up their jobs and become "persons of no fixed abode" they can pick and choose their employer, or at any rate we in this paper can find employment for them, and there is no regulation to prevent us from telling good men that we know of jobs to suit them.—C. G. G.



## THE SERVICES AND LABOUR.

It will be remembered that in *THE AEROPLANE* of April 21st reference was made to a strike in an aeroplane factory, which occurred because a works-manager dismissed a metal-worker as hopelessly incompetent, although he had given him two months' trial to let him have a fair chance of picking up his new job.

The sequel would be comic in peace time—in war time it is tragic, because it demonstrates what criminal folly a strike is as an argument in a dispute when lives are being thrown away for want of war munitions.

After much discussion it was decided that in consideration of the metal-workers spending the week-end in teaching the blacksmith how to make dies, the firm should reinstate him. The metal-workers set to work and taught their "pal" all day Sunday and all day Monday, but by Tuesday they got thoroughly "fed up" with teaching him, and sent a deputation to the management to say that he was "no damned good" and that he had better be sacked. Whereupon the peaceful work of building aeroplanes was tranquilly resumed.

One hopes that this will be a lesson to any well-disposed workmen who were induced to go on strike out of misplaced sympathy for the down-trodden victim. Also, it should be useful to the man who sent an anonymous letter to this office full of abuse of "grabbing capitalists" and all the other claptrap uneducated men with active brains learn from street-corner orators who make an easy living as professional agitators, taking precious good care that they never do an honest day's work themselves.

Of course the real root of all this labour trouble is our rotten educational system which has produced that terrible being the board-school teacher, a poor creature with a half-baked brain, incapable of educating even him or her self, and deprived by law of any possibility of inculcating any idea of discipline owing to the abolition of corporal punishment.

Our public schools may teach badly but they do educate, and there is a vast difference between the two. The son of an earl or the son of a millionaire may be flogged when he deserves flogging, but the teacher who dares to raise a hand to an undisciplined gutter-brat is liable to prosecution by a drunken stiltless parent, who probably thrashes the same child mercilessly, not when it deserves thrashing but merely when drink or temper makes thrashing seem an entertaining form of amusement. Under such a system how can one expect to teach the lower classes the value of law, order, and discipline, when there is not even military service to teach a youth that discipline which he never learned in his childhood?

The following letter has been received on the above question:—

"Dear Sir,—Replying to your very one-sided article on 'Services and Labour' in April 21st *AEROPLANE*, allow me to enlighten you a little from the workman's point of view. In the first place you say that it would be waste of time appealing to the men from a patriotic point of view. I can at least give you one instance of a genuine patriotic example, which absolutely puts the boot on the other leg, viz.:—

"A very experienced and well-known boat-builder working in the float department of a certain aeroplane firm was recently so disgusted with the disgraceful way the 'floats' were being pitched together that he gave up the berth in disgust. The foreman of the department was evidently working on commission, so that the time taken in 'making' (sic) them was the one and only consideration. To add to the farce, there were gilt-edged so-called inspectors who placed the (I.A.D.) Government stamp upon each float and passed it in absolute ignorance of the work they were supposed to be capable of examining.

"This is only one instance, but I think it will serve to show that as long as this disgraceful state of affairs exists certain firms will never retain first-class skilled men, and although your complaint is against unskilled men, this class of man is encouraged by some firms as long as he is cheap."

Naturally there are faults on both sides. No one will pretend that all employers of labour are perfect. The present writer has worked under too many employers not to know something of their many failings. But that is not the point.

The argument is, whether in time of war the workman has any moral right to strike, and so decrease the output of war munitions. It was pointed out in this paper that there are other ways of getting one's own back besides striking, as for example mobbing unpopular officials outside working hours, or demonstrating in force before an employer's private house. But the Nation's work must be done first. What is the good of gassing about the "solidarity of labour" if that solidarity does not extend to those labouring in the trenches? Every man who strikes delays something. That delay may cause the absence of the particular shell which would have wiped out the German gun which fires the shell which kills the striker's brother or best pal.

In our own business similar delay may deprive the R.F.C. of the particular machine which would have destroyed a railway junction and have stopped the reinforcements which repulse our advance and kill hundreds of our men.

It is, of course, hopeless to expect in the working man as a whole sufficient imagination to grasp such an idea, but there it is.

## The Climbing Machine.

Time does occasionally bring its revenge, and one is glad to see that after years of studious neglect on the part of the authorities the Caudron biplane is coming into its own. No one will claim, of course, that the Caudron compares as a speed machine with some of the new model biplanes, but it certainly possesses extraordinary climbing power and the ability to land without killing its pilot under the most unfavourable circumstances. The French Army, as already stated in this paper, has many hundreds of Caudrons on order, and quite respectable orders for powerful Caudron biplanes have recently been placed with the British Caudron Company, Ltd. Several of these machines have already passed their tests at Hendon, and have done magnificent climbs, besides showing a speed range of something like 300 per cent. as between their landing speed and maximum flying speed.

It must be remembered that for artillery control and tactical observation great climbing power is more valuable than great speed, and even for bomb-dropping raids climbing power, which is in fact the same thing as lifting power, is also even more desirable than sheer speed, for many a German aviator has saved his life and his observations because his machine, although much slower than those of the British and French pilots, has simply climbed out of their sight, which certainly would not have occurred if a Caudron of the type now being delivered to the Admiralty had been in pursuit.

One of the latest productions of the French Caudron Company is a large twin-engined gun-carrier, which has shown the most astonishing capability of going aloft with big loads together with quite respectable speed. One may not, of course, describe it in detail, but one may expect to hear good accounts of its doings on active service before long.

For quite a considerable time this paper has strongly advocated the Caudron type of machine for school purposes, and the justice of the estimate then formed of its powers is shown in the fact that to-day every civilian land school in this country is using small and large machines of the Caudron type for tuition in flying tractors. It is, therefore, difficult to understand why Service pupils are still allowed to smash up in their early experiments other types which not only cost more to buy and take longer to repair when smashed, but would, if not used for school work, be available for active service.

The British Caudron Company's new works at Cricklewood are very well suited to their purpose, having been originally built as motor works, and having light and airy shop space. Happily for the firm there is also plenty of room for extensions. When the present writer visited the works some time ago they were already busy on orders for one of our Allies, and now that our own authorities are beginning to recognise the utility of the Caudron there is something like the deserved amount of business doing.

## The Straits Settlements take an interest in Aviation.

Mr. C. Alma Baker, of Batu Gajah, has issued an appeal to the people of S.S. and F.M.S., through the local press, to subscribe to an Aircraft Fund, with a view of presenting Britain with an aeroplane.



**THE WORK OF THE HENDON SCHOOLS.**

BY D. W. THORBURN.

These are strenuous days. Every mind is—or should be—occupied first and foremost with the great international struggle which is now taking place, and the whole aim of every individual in the nation should be to help in some way to achieve the great purpose which is before us. This may be a platitude, but the fact cannot be repeated too often. Under the strangely altered circumstances in which we now live things have taken on a new significance. There is a revised sense of proportion in everything.

The professional footballer, formerly the hero of the errand-boys, notoriously sound of wind and limb, although not quiet to drive, is now an object of scorn and derision if he remains a professional footballer. Even Mr. Lloyd George, not so many months ago looked upon by the writers of comic songs for un-musical halls as a very present help in time of trouble, is now credited with statesmanlike ability and feelings of genuine patriotism. In view of these remarkable changes of public sentiment it is only natural that a new and more serious significance attaches to the various schools of aviation at Hendon and elsewhere. No longer are they regarded by the man in the street—which may, for the moment, be translated as the Man in the Shilling Enclosure—as collections of large sheds with tin roofs and board sides, inhabited chiefly by youths with no tin and bored faces, who dash hither and thither on the rear mud-guards of one another's motor-cycles, and never do anything that looks like work. These same schools are now veritable hives of industry, where life begins at daybreak, and is not all honey but mostly oil. The fact is beginning to be recognised that they are engaged in a work of the greatest national importance. A new spirit animates the pupils, and one cannot fail to be impressed by their keenness and the eager way in which they look forward to active service—for it is hardly necessary to remark that probably without exception the pupils of to-day have all joined their respective schools for the purpose of becoming naval or military aviators. It is even said that their socks, on the average, are now of a quieter hue.

The London Aerodrome has served a most useful purpose in the past, but never was its utility so immediately apparent as at

the present day. Five separate schools of flying are hard at work, and the value of the services rendered to the Allied forces by the pilots from these schools it would be impossible to estimate. Young as the industry is, enough experience has been crammed into the last few years to evolve some very definite methods of tuition, and the organisation of these schools is remarkably complete.

**The G.-W. School.**

In dealing with the Hendon schools one naturally gives first place to the one controlled by the Grahame-White Aviation Company, Ltd. This school has for its manager Mr. A. Murray Ross. His energy is only equalled by his tact, and there are few men at Hendon who have more genuine friends than Mr. Ross. He is on duty at daybreak, arranging lessons and superintending every detail of the work, and when one hears the length of his average day one can only wonder what the comment of an L.C.C. Inspector would be on his case. The chief instructor is Mr. Marcus D. Manton, who, if he is not actually a native of Hendon, is at least as familiar a feature as Pylon No. 1. He is assisted by Mr. J. S. P. Winter and Mr. Osipenko, the latter, by the way, also answering to the name (as the lost dog advertisements say) of "Mr. Russell," which takes less time to say and thus affords an illustration of how valuable time has become at the Aerodrome. The school is at present equipped with four machines of the box-kite type, designed and constructed at the Grahame-White works, each having a 50-h.p. Gnome engine. To be more accurate, there are two engines to each machine, a spare one always being held in reserve. Two of the machines are of the bi-rudder type and the remaining two have single rudders.

Since last August the number of pupils has been limited to twelve at a time. All are officers on probation of the R.N.A.S., and when one takes his certificate his place is at once filled from the waiting list, so that there are always twelve learning. This limit ensures careful and thorough individual training, and the brilliant and even heroic feats of several pilots from this school during the past few months speak volumes for the tuition they have received. It would be gratifying to hear that more machines have been added, so that the limit of the number of pupils may be extended.



Some Grahame-White Pupils:—Back Row, Left to Right: Prob. Flight Sub-Lieuts. E. A. de L. de Ville and M. Hood, Mr. M. Manton (Instructor), Mr. H. G. Osipenko (Instructor), Mr. A. Murray Ross (School Manager), Mr. A. E. Wright (Instructor), Prob. Flight Sub-Lieuts. J. F. Hutchinson and A. F. Jacob. Bottom Row, Left to Right: Prob. Flight Sub-Lieuts. J. F. Potts, H. S. Kerby, Mr. A. Simpson, and E. C. Bingham.

*Photograph by F. N. Birkett, Shepherd's Bush.*



Fifty-four tickets have been taken since August 4th, a creditable record, bearing in mind the fact that the period includes the worst months of the year for school work. The average flying time per pupil has been  $4\frac{1}{2}$  to 5 hours, and it has generally taken four to five weeks to get this time. It is interesting to learn that the naval pupils have all got through much quicker than was the case in the old days. This is doubtless accounted for partly by the fact that the outbreak of war has made them keener, and partly by the fact that they are all specially selected for their physical fitness.

#### The Beatty School.

The Beatty School is the largest at Hendon, which is perhaps not surprising as Mr. G. W. Beatty comes from the U.S.A. Most things from America are on a big scale. Mr. Beatty, as an early pupil of the Brothers Wright, may be looked on as a veteran, and as he is possessed of unusual business acumen he has turned to good account the long and varied experience he has had in the air and the workshop. It is his ambition to build up the largest privately owned school in the country, and if enterprise and determination count for anything he should succeed. Mr. Beatty not only knows how to fly, as everyone will admit who is familiar with his exhibition flights, but he knows how to teach. His staff of instructors comprises, besides himself, Messrs. W. Roche-Kelly, C. B. Prodger, and Bransby-Williams, Junr.

His school machines consist of one single-seater Wright biplane and three two-seater Wrights, and by the time these lines are in print it is probable that two 35-h.p. Caudrons and a 45-h.p. Caudron will have been added. Three more two-seater Wrights are also in course of construction. Mr. Beatty has produced a new engine, and after sundry experiments and alterations it is now giving 46.4 h.p., or 6.4 more than it was originally designed for. Others will follow in due course, and this standardising of their own engines on their own machines will make for considerable economy and efficiency, besides rendering them independent of other engines, which are becoming increasingly difficult to procure. As an instance of the thoroughness of the school it might be mentioned that they even have their own specially made Beatty Aero Tyres.

Several former pupils are now instructors elsewhere. Mr. Rowland Ding, for example, is at the N.A.C. Seaplane School, Mr. Ruffy is running a school of his own, while Mr. Watts is instructor under the War Office at Brooklands. Mr. Beatty is proud of the fact that practically all his former pupils are now on active service, while not one has been rejected. He has no less than 30 on his books at present.

(To be continued.)

#### The Week-End at Hendon.

On Saturday a gusty wind varied between 25 and 35 miles per hour, and there was only a moderate amount of flying. Mr. Osipenko was out on a 50-h.p. Grahame-White box-kite, and he was followed later by Mr. Manton on the same machine. Mr. J. L. Hall made a long and good flight on a 45-h.p. Caudron, and when the tea-rooms were at their busiest Mr. Osipenko again flew several circuits and dropped sundry harmless and silent bombs on an almost invisible target, by way of showing what he might do with the genuine article.

The weather on Sunday was delightful, the wind never exceeding 15 miles per hour during the afternoon, with occasional calm spells, and there was a very large attendance. Among other visitors were observed a contingent of the National Guard, who came to the aerodrome in the course of a route march. They were rewarded by seeing plenty of flying on a varied selection of machines.

At 3.30 Mr. Baumann made his appearance on a 50-h.p. Ruffy-Caudron. Mr. Osipenko, who is now becoming quite well known to Hendon visitors, although the Japanese look of his Russian name gives rise to sundry misapprehensions until a close view of his thoroughly European face is obtained, was out on the 70-h.p. Grahame-White biplane with many passengers.

Mr. W. Roche-Kelly on a 50-h.p. Wright, and Mr. G. W. Beatty on a 70-h.p. Wright, gave several exhibition flights in the most approved Beatty style, and a new 100-h.p. Caudron, recently built by the British Caudron Co., was also flying during the afternoon, climbing particularly well. Mr. Winter was

on a 50-h.p. Grahame-White, and passengers were waiting their turns with more or less patience, and recounting their impressions with more or less enthusiasm, until dusk. Hendon is beginning to look quite like its own self again with the advent of warmer weather.

#### Flying in the Midlands.

It is reported that a large aerodrome is being established near Birmingham, presumably for Service purposes.

At Billesley Common, on the south side of Birmingham, there is only the old shed which used to shelter the late lamented "Aerial Wheel," and later Mr. Prosser's 45-h.p. Caudron. Here an old 50-h.p. Blériot was disporting itself last week. The field is ridged, and the appearance of the machine bumping over the ridges in an attempt to rise was more comic for the onlookers than comfortable for the pilot. If anyone tries to land a Morane here otherwise than exactly parallel with the ridges there will be a bill for repairs in which the propeller (and perhaps the pilot) will figure.

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### The Romance of Invention.

A speaker in a recent discussion stated that so great and important an invention as the wire-wound gun was kept out of the world of practical use for 14 years because Lord Armstrong and Mr. Brunel found themselves forestalled by 14 days. Fourteen days' delay cost England 14 years' delay in getting the use of this gun.

Whether it be that curious factor "telepathy," or some other undefined influence, it is undoubtedly true that when one man is concentrating on a certain invention somebody else is also struggling with it. Many records reveal amazingly "close finishes."

The work of protecting the inventor and the naming of his invention, the designing of his trade-mark, are all one, and the inventor or manufacturer should learn to realise how completely the services of specialists in such work are at his disposal, and how comparatively low is the cost of such services.

Prominent among those who have reduced this profession to a fine art is Mr. Benjamin T. King, Consulting British and U.S. Patent Agent, of 165, Queen Victoria Street, London, whose personal interest and "touch," extending back thirty years, have been connected with many striking successes in all such work, and he will be happy to give information assistance, and direction to readers of THE AEROPLANE.

### School and Weather Reports.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
Hendon ... ..	Windy	Windy	Windy	Windy	Fair	Fair	Fine
East Coast ...	Fine	Fine	Fine	Fine	Fine	Fine	Fine
South Coast ..	Wind	Wind	Wind	Wind	Fine	Fine	Fine
Lake District ..	Fine	Fine	Fine	Fine	Fine	Fine	Fine
	Wind	Wet	Fair	Fine	Fine	Fine	Fine

**Hendon.**—AT THE GRAHAME-WHITE SCHOOL.—Instructors: Messrs. Manton, Russell and Winter. Pupils with instr.: Prob. Flt. Sub-Lts. Bingham, Burling, Coleman, De Ville, Simpson, and Wain. 8's or circs. alone: Prob. Flt. Sub-Lts. Jacob, Bone, and Kerby. Certificate taken by Prob. Flt. Sub-Lt. Jacob. Machines: Grahame-White biplanes.

At THE BEATTY SCHOOL.—Instructors: Messrs. G. W. Beatty, W. Roche-Kelly, and C. B. Prodder. Pupils with instr.: Messrs. Alcock, Bond, Bright, Chapelle, Cooper, Crowe, de Maza, Fanning, Fraser, Leong, Monfea, Roche, Whincup, Wiles, Crossman, Johnston, Rutherford, Ross, Hay, Summers, Chalmers, Tomlinson. Mr. Cooper took his certificate on Friday, when all other flying had been suspended owing to bad weather; this speaks well for Mr. Cooper's ability as a pilot and for the training he has received. Machines in use were, as usual, Beatty-Wright dual control and single-seater biplanes. Exhibition flights were given by Messrs. Beatty and Roche-Kelly on Thursday and Sunday.

At THE HALL FLYING SCHOOL.—Pupils practising rolling on No. 1 machine: Messrs. Minot (50 mins.), Mason (40), Snowden (20), Cook (10), Mason (36), Furlong (8), Hatchman (5), Mitchell (12). Messrs. Horner and Brooker were taken for instructional flights by instructors on Machines No. 2 and No. 4.

Pupil making straight flights: Mr. Hill 8 good straights on No. 1 Machine. Circs and 8's, Mr. H. F. Stevens flew for half an hour at 800 feet and practised landings for 10 mins. on No. 3 machine.

On Friday, April 30th, Mr. Stevens completed the full certificate tests in exceptionally good style, reaching 800 feet in the altitude test and gliding from 600 feet with engine stopped, his landing being faultless.

At THE LONDON AND PROVINCIAL AVIATION Co's SCHOOL.—Instructors: Messrs. Warren and Smiles. Strts or rolling alone: Messrs. L. Deschamps, P. G. Allen, W. D. Smiles, M. Tranchoume, J. A. Turner. 8's or circs alone: Messrs. W. D. Smiles, J. A. H. Croke. J. A. H. Croke took a good ticket on Friday morning.

At THE RUFFY-BAUMANN SCHOOL.—Instructors: Messrs. E. Baumann, James Brothers, and Virgilio. Pupils with instr.: Mr. E. Baumann out on 60 Caudron with pupils. Strts or



rolling alone on 45 Caudron: Messrs. Roobeart (16), King (16), Bell (16), Cole (12), England (8), Sykes (16), Jackson (12). 8's and circles alone: Mr. Kenworthy, 8 mins. Machines: Tractor biplanes: 60 Caudron, 50 and 45 h.p. R.-B. Mr. E. Baumann was out on Sunday on 60 Caudron with passengers. The new school machines with 60 h.p. Gnômes give one an excellent impression.

**Windermere.**—At THE N.A.C. SEAPLANE SCHOOL. — Instructors: Messrs. W. Rowland Ding, C. L. Pashley, and J. Lankester Parker. Pupils with instr on machine: Flt. Lt. Atherton, R.N. (62), and Messrs. C. A. Barker (22), D. S. C. Macaskie (12), M. H. Mackrow (24), F. H. M. Macintyre (25), H. P. Reid (38), G. L. Railton (28), J. F. Ridgway (19), H. Robinson (28), H. Slingsby (46). 8's alone: Mr. A. Buck. Machines in use: Dual control Avro, 50 Gnome, and N.A.C. (80 Gnome) monoplane. Messrs. W. R. Ding, C. L. Pashley, and J. Lankester Parker were up testing and giving exhibitions on several occasions, and a number of passengers were carried on Sunday.

On Saturday the pusher monoplane was out after considerable alteration. The whole empennage has been re-designed, with larger elevators and rudder, and in addition new floats and chassis have been fitted. The rather daring experiment of using welded steel for the bottoms and sides of the floats has been tried with success.

Piloted by Mr. Rowland Ding she was put through a series of tests. No alterations of any kind were found to be necessary, and she climbed to 3,000 ft. at the first attempt. Her behaviour on the water was almost ideal, and it is worth noting that after being continuously in the water for three days and nights there is no sign of moisture in the interior of the floats.

### A Prophecy.

The following letter is of interest:—

Leeds, April, 1915.

Sir,—I wonder if this sixteenth century proverb would be of any interest to you or THE AEROPLANE, of which I am a regular reader. It is an old proverb well known in the North of France, and runs:

When man flies  
Ten nations shall go to war;  
They shall go out with the harvest  
And return with the vintages.

Those who have any faith in prophecies will find it peculiarly significant to the present war. Only the last line remains to be fulfilled. That is a matter which should be forthcoming next autumn. I hope that the proverb is true in the last line.

(Signed) R. H. TATE.

[One would like to know the sources from which the prophecy was disinterred.—Ed.]

## MISCELLANEOUS ADVERTISEMENTS

All advertisements for this column should arrive at this office by 6 p.m. MONDAY to ensure insertion.

For the convenience of Advertisers, replies can be received at the office of "THE AEROPLANE," 166, Piccadilly, W.

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**W**ANTED for Technical Dept., General Office, must have had Drawing Office, Works and Aeroplane experience.—A. V. Roe and Co., Ltd., Manchester.

**R**EQUIRED immediately, smart Aeroplane Draughtsman. Apply, giving full particulars and wages required, to Box 643, THE AEROPLANE, 166, Piccadilly, W.

**G**OOD MARKER-OFF wanted for Aeroplane details. Good prospect for right man. Only those used to aeroplane work need apply.—Boulton and Paul, Ltd., Aeronautical Department, Norwich.

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"THE AEROPLANE," MAY 12, 1915.

# THE AEROPLANE

12  
WEEKLY

Edited by C. G. GREY. ("Aero-Amateur")

VOL. VIII. [REGISTERED AT THE G.P.O.  
AS A NEWSPAPER.] WEDNESDAY, MAY 12, 1915.

No. 19

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## On Intellectual Honesty.

There seems to be a division of opinion about the use of gas-bombs in war. Will someone please explain why flooding a country with *visible* gas, which one can see coming and avoid by the simple process of running away, is any more "inhuman" or "barbarous" than flooding with water a country occupied by one's enemy and drowning him if he stays to be drowned? One can see the gas and one can see the water, so wherein lies the difference? It is just as well to clear the mind of cant in these matters, for one never knows when one may want to do the same thing oneself, though the gas is less effective than water because it does not set up a permanent barrier, and cuts equally well the other way when the wind changes.

While discussing this question of poison gasses recently, an irresponsible friend suggested that the R.F.C. might make some of the less efficient aeroplanes of official design justify their existence by flying them over to the gas area and fixing them to the ground tail on to the advancing cloud of gas so that by keeping the propellers running the gas might be blown backward onto the advancing Germans. There is many a true word spoken in jest, and the idea is not quite as crazy as it sounds.

### An Antidote.

Of course, one would not use aeroplanes for the job, but there seems no good reason why some of our hundreds of idle armoured cars—which are waiting for that long-hoped-for German repulse—should not be turned to good account. It ought to be quite possible to rig up quite quickly and cheaply on a number of these cars large rotary air fans, driving them by belt off the car motor. They could be fixed on overhead frames designed to lie down flat on top of the cars when not in use, like the collapsible funnel of a penny steamer. By placing them overhead one would enable the crew of the car to use their machine-guns or quick-firers to fire along the clear lane blown through the gas by their air-fans.

The expression air-fan is used advisedly, for the proper aeroplane propeller is quite a different article. The propeller is designed to screw its way through the air with the highest efficiency, that is to say its designer's intention and hope is that it shall get the best possible grip on the air while actually shifting as little air as possible. An air-fan, on the other hand, such as the well-known Blackman fan, is designed to throw as much air as possible backwards, at as high a speed as possible with a minimum expenditure of power, which is quite another problem in design.

Several squadrons of cars thus equipped could be kept in readiness to rush off at a moment's notice to blow away at any rate some of the gas as it drifted over our positions, and so hold enough ground to form a salient jutting into the enemy's lines and bring a flanking fire to bear on the troops which advanced past the point of the salient. It must be remembered that as the cars came into position they would be hidden from the enemy's artillery by the advancing wall of gas, and so would have the advantage of opening fire themselves at some unexpected point on advancing infantry.

It is even possible that in perfectly calm weather,

when there is no wind to blow poison-gas one way or the other, the cars might be used to blow gas into the enemy's lines as a preliminary to an infantry attack. In that case one would raise the wall of gas first and then rush the cars up under its cover to blow it in the right direction. Most people have seen an ordinary aeroplane propeller blow a fog of castor-oil smoke 200 to 300 yards across an aerodrome on a calm day, so with scientifically made air-fans, and properly concocted gas, a dozen or twenty high-powered cars ought to be able to do quite good business over a front of 500 yards or so.

The prevailing wind in Western Europe is between North-West and South-West, so by using our natural opportunities to the best advantage, and by making our own opportunities in calm weather, we ought to be able to beat the Germans at their own game, if only we can succeed in humbugging our own consciences into believing that it is the righteous thing to do, or if we can be intellectually honest and say that we are going to play this game out under "catch-as-catch-can" rules, and "damn the consequences," because we mean to win by fair means or foul.

### A Confession of Weakness.

Even that priceless person the official Eye-Witness seems to have let himself lose his mental orientation over the poison-gas business, for he refers to its use as a "confession of weakness." It may indicate weakness in other material, such as guns and aircraft, but it certainly does not show weakness of determination or of intellect, and there is much to be said for the German argument that barbarism in war is justified by the fact that it shortens the duration of war.

The "Liverpool Daily Post" refers to the use of poison-gas as a "Hellish Device." So it is. So is the bayonet with which a soldier makes a hole in the stomach of an anonymous enemy who a few months before was the blameless father of a peaceful and happy family. So is the iron-tipped boot with which a drunken hooligan kicks out the brains of a harmless necessary policeman.

So were firearms considered by mediaeval knights when "villainous saltpetre" enabled a common foot-soldier to punch holes in a gentleman's armour before the said gentleman could spit him with a ten-foot lance, or smite him o'er the mazzard (wherever that may be) with a spikey mace. So were the methods of repelling attacks on baronial castles when "something humöröns with boiling oil in it" was emptied over the parapet onto the devoted heads of the attacking party. So is a cane applied to the seating accommodation of a delicately nurtured but badly disciplined small boy by an exasperated and exacerbatated schoolmaster. So is any form of argument which depends upon physical injury and not on moral suasion.

Unfortunately "hellish devices" are the only arguments most people are likely to understand until such time as human nature has been reformed by a practically impossible system of eugenics, and intellectual honesty masters cant and humbug. And then probably the world will not be half as pleasant a place to inhabit. Certainly it will not be as humorous. Meantime any attempt to run a war on a humanitarian basis



is not only foolish and futile, but wasteful and inhumane.

#### For Instance.

It will be remembered that certain silly humanitarian pacifists tried some time before the war to introduce an international agreement that bombs should not be dropped from aircraft. Certain honest countries refused to be a party to any such agreement, and so the idea fortunately fell through. But if it had been adopted, think what it would have cost us.

Our military classes are scrupulously honourable—whatever our political and commercial classes may be—and we should have stuck to our agreement. As a result, the Germans would have brought up bigger supplies and reinforcements at Neuve Chapelle, because the railways which were smashed by the bombs dropped by the R.F.C. would have been usable for a longer time than they were. And the resultant slaughter on both sides would have been greater.

Similarly, the R.N.A.S. would not be constantly dropping bombs on Zeebrugge, Antwerp, and so forth, and the Germans would be able to launch unlimited submarines unobstructed, with greater consequent loss of life at sea.

#### Two Alternatives.

As a matter of fact, there are only two rational ways of making war—namely, the chivalrous method and the wholesale method. If all nations were altogether honourable throughout all classes of the population—which is obviously impossible—wars could be decided by picked teams of champions from each nation, and the belligerent countries would abide by the result.

A team from each nation would visit the enemy country, and would fight a "home" team in the local Stadium, which, under the circumstances, could easily be filled with spectators at enormous prices, and thus the war could be made to pay for itself handsomely. Of course, firearms would have to be barred, and it would all be bayonet, sword, and lance. If one wanted to bring the latest arm into it, the picked aviators of each nation might be allowed to fight with short-range large-bore pistols at selected aerodromes.

The only reasonable alternative is a war in which the whole nation takes part, a war of extermination, a war in which there is no foolish distinction between combatant and non-combatant, for the non-combatants are either making munitions of war or are raising food for combatants or for those who are making munitions, or cooking food or making clothes for those who are raising the food for the etc., or engaged in growing up to become combatants or food-raisers or cooks. Consequently, if one comes down to plain logic, everyone is helping in the prosecution of the war, and in common reasonableness should be liable to treatment as a combatant if caught.

#### The Labour Question Again.

Under such conditions the labour question could be properly handled, for everyone would be a State servant and under Martial Law. No one need then worry about "Labour versus Liquor," for all liquor would be under State control.

In this connection a friend of mine made a brilliant suggestion which is quite a workable proposition under existing conditions, namely, that the "Armament Districts"—such as the Clyde, Tyneside, the Black Country, and so forth—should be put under Martial Law, and all public-houses closed to ordinary customers. Liquor-tickets, somewhat similar in operation to the German bread-tickets, would be issued, but only to men working for armament firms. These men would receive their tickets on pay-day along with their wages, and the amount of liquor allowed would be limited. Also, a certain amount of liquor would be docked for lost time or bad work, so that each man's allowance would be settled automatically along with his wages sheet. The liquor itself might either be supplied in

existing licensed premises, or from canteens inside the works.

Naturally such a system would be open to abuses, but it would, at worst, be an improvement on present conditions, in which men draw twice the money they are worth for half the amount of work they would be doing in normal times and consume twice as much drink, or more.

#### The Police at Fault.

Incidentally, much good might be done without any special legislation if the police did their duty properly. The policeman who brings in ordinary "drunks" only makes himself unpopular with his senior officers. Any special constable on ordinary police duty learns this very soon after joining, and it is quite time someone exposed the scandal in Parliament.

The reason is that the fat and comfortable "station sergeant," or whatever he is called, dislikes having his contemplative peacefulness disturbed by drunk after drunk being run in, for he has all the trouble of booking particulars and sending in reports and so forth, and gets no kudos out of it.

#### A Simple Improvement.

Yet, if the higher police authorities all over the country let it be known that station-sergeants would be promoted if they put a stop to drunkenness in their districts, and that constables who roped in numerous "drunks" would have their services recognised, the result would be felt immediately. Magistrates also should be instructed that all convicted "drunks" should be imprisoned without the option of a fine. The average workman would soon stop getting drunk if he found that he lost a week's wages and had to sleep on a plank bed every time he passed the limit. This simple instruction from headquarters would not stop drunkenness, but it would put a very sound check on it. And even a check on drunkenness would soon increase the output of armament.

#### The Only Rational System.

However, to return to the consideration of war as it should be carried on under rational conditions—assuming that any form of physical violence can be considered rational. Every human being in the country ought to be working heart and soul for the State in the endeavour to make the fighting forces more efficient and effective. That is the state of mind of Germany to-day.

#### From One Who Knows.

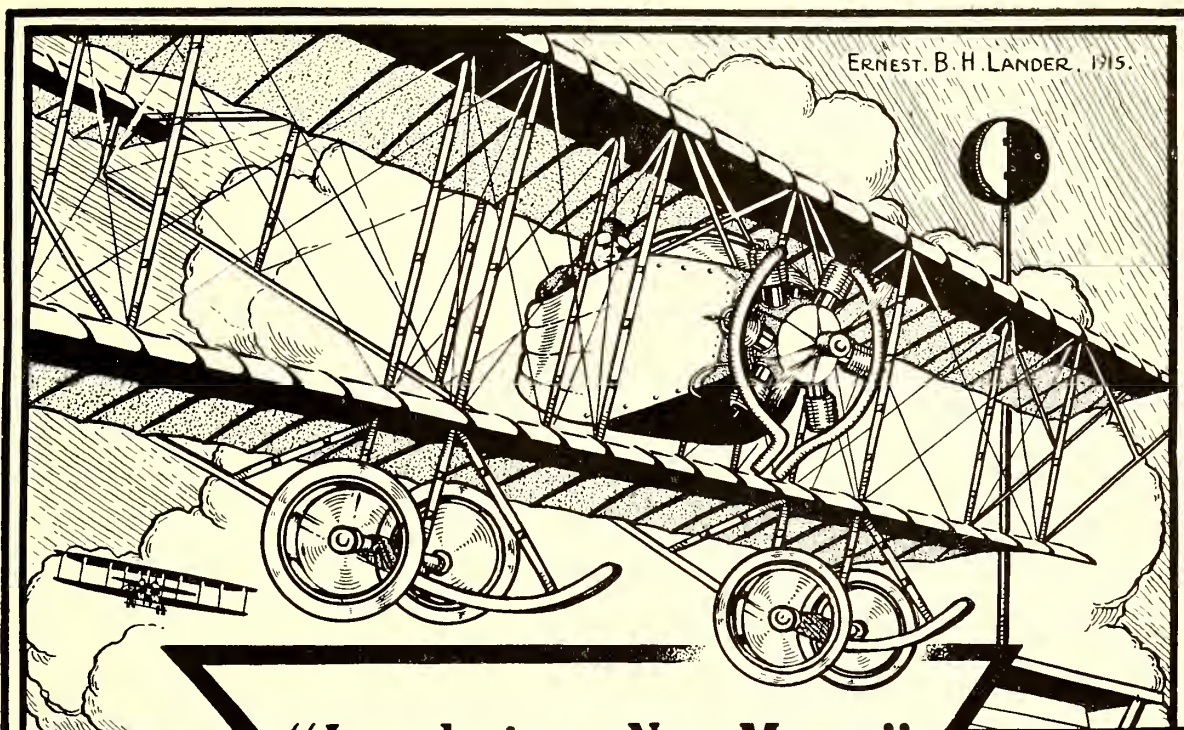
A valued friend of mine, a highly intelligent, widely travelled man, who has just returned from Germany after being imprisoned there ever since the beginning of the war, tells me that the German people were never so much one people as to-day. Their confidence is unshaken. Their organisation is superb. Their discipline is wholly admirable. All the tales one reads of the weakening of German moral, of scarcity of matériel, of internal dissension, are lies, hatched out by our imbecile press and futile Government with the intention of encouraging the English people, when anyone who is not a fool Englishman knows that the only way to get an Englishman to stir himself is to tell him the worst and rouse his dander. The truth is that we are as far off beating the German Nation now as we were at the outbreak of war, and the sooner the people in this country know it the better.

My friend loathes Germany and all its works, for he has been brutally treated, and has undergone four months' solitary confinement for political reasons, but he is full of admiration of German efficiency, German strength, and German "one-ness." He is as keen a pro-German as I am myself and hates Germany as cordially.

#### Thoroughness.

That is just where we must copy the enemy if we are to win through as emphatically as our population, our wealth, the area of our Empire, and our place in the World demands. Everyone should not only be doing





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his or her "bit" for the State, but everyone should be doing their utmost.

Under a strong Government which knew how to "work" the press as it could easily be worked, every soul in the country would be in a few weeks doing some useful work or other for the Services.

The only exceptions would be people who are honestly opposed to the war. And the proper thing to do with them is to deport them to a neutral country so that they will not be in the way.

Everyone else ought to be in the service of the State, and should be helping to carry on the war as efficiently and as effectively and as relentlessly as possible—which, when you come to think of it, is Socialism, and Conscriptionism, and Feudalism, and Militarism, and Barbarism, and Toryism, and half a dozen other "isms" rolled into one, but it is also pure Logic.

#### An Ideal Country.

Great Britain would have been an ideal country if it had been self-contained and self-feeding, so that it was free from any need of outside supplies, and was

so fortified round its coasts that no hostile fleet dare approach within gun-range. I say "would have been" advisedly, for the time for such an ideal country is past. In future wars, which will be national wars, fought "all in," without any silly Hague or Geneva rules, aircraft will make such a self-contained country impossible. The little aeroplanes of 1,000 h.p. or so, such as all countries are building to-day, will be regarded much as the modern Navy regards torpedo-boats. Really big aircraft will distribute asphyxiating bombs in effective quantities over the manufacturing and administrative centres of enemy countries 1,000 miles or more away, and the country with the biggest Air Service will be top dog. It remains to be seen, probably by posterity, whether this country is going to be top dog in the air as well as on the sea, but it depends on the remainder of the present generation and on the whole of the next generation whether the Flying Services are developed so that we may become top dog, or whether we are misled by pacifists into turning our swords into plough-shares, and our war-planes into chicken-coops.—C. G. G.

#### The Question of Publicity.

A singularly foolish letter in the "Times," signed "W. Burdett-Coutts," complaining that the official Eye-Witness does not mention, or that the Censor does not pass, the names of those who distinguish themselves, and instancing the case of the late Mr. Moorhouse, has drawn this crushing reply:—

TO THE EDITOR OF THE "TIMES."

Sir,—Has not "Eye-Witness" written the finest epitaph that can be desired for a soldier dying in his devotion to duty, an epitaph that is in keeping with the spirit of Nelson's famous signal:—

"He made his report."

Is not this better than to be trumpeted as a hero?

Your obedient servant, A SOLDIER.

It seems impossible for those of vulgar mind to understand that an officer and gentleman hates to see his name in print, outside official announcements, worse than death itself, especially in war time. He does his duty because it is his duty, and not because he desires the applause of the common mob, which he despises. If his commanding officer sees fit to mention him in dispatches he is pleased, and if he does anything notable which wins for him a D.S.O., or a Military Cross, he is duly honoured, but he would perhaps rather that the printed account of his action were circulated in the Service only, and not in the public press. It is, nevertheless, in the interests of the Service that an account worded in a properly dignified and restrained manner should be public property, and to that extent he puts up with otherwise unwelcome publicity.

The British officer of the type of the old Navy and Army is at once the proudest and the most humble of men, which is just why he puzzles those who cannot understand his mental outlook. The publicity-hunting, medal-collecting officer may be as brave as a lion, but he is never a good officer, for he neglects his job in order to advertise himself or to do "deeds of desperate daring." That is why, even if he pushes himself by political or financial pull into high rank, he is always regarded with mingled suspicion and contempt by the officers who have done the work while he has been collecting the limelight, and that is why publicity of any kind is shunned by the best class of officer while on service, though perhaps in time of peace an officer of the best type may be proud of a public reputation as a first-class horseman, and may in the future be proud of winning big flying races, analogous to the Grand Military Steeplechase, or the "National."

#### The R.F.C. Aid Committee.

The Secretary of the Royal Flying Corps Aid Committee, Miss Constance Dudley, writing from Surrey House, Marble Arch, W., the new office of the Committee, encloses a list of subscriptions since the end of February. The donors include a number of well-known firms unconnected with the aeroplane industry, and the handsome total of £298 5s. 11d. has been reached during this period.

#### The Aeronautical Society's "Faux Pas."

With reference to the remarks in the last issue of THE AEROPLANE under the above title, this paper is informed by the Secretary of the Aeronautical Society:—

(1) That the circular, to one paragraph of which exception was taken, was drawn up and circulated by him personally (on a general authority from the Council to proceed with the arrangements for the meeting), and was not seen, drafted or inspired in any way by anyone connected, directly or indirectly, with the Royal Aircraft Factory.

(2) That he has no connection with "various articles in the press," and is unaware of the identity of "Ornis" in the "Times."

(3) That there is no justification for any implication that the Royal Aircraft Factory controls or unduly influences the Aeronautical Society.

(4) That it is inaccurate to state or imply that the only Royal Aircraft Factory aeroplanes to which Professor Bryan's methods have been applied are the B.E.2c. and the B.E.8a.

(5) That the "objectionable paragraph" if read without prejudice contains a simple statement of fact that was made without any ulterior motive, either of advertisement of the Royal Aircraft Factory or disparagement of private firms.

#### The R.N.A.S. Comforts Fund.

It is now possible to publish details of the sums expended on comforts during the months of March and April. These amounts, added to those previously published for the five months ending February 28th, make a total of £881 17s. 1d. usefully expended, in addition to many thousands of ready-made garments sent by thoughtful individuals and institutions.

Mrs. Sueter is to be congratulated on the arduous work she has performed, for which she must feel amply repaid by the many expressions of gratitude her practical sympathy has evoked.

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From the "London Gazette," May 4th, 1915.

WAR OFFICE, MAY 4TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Asst. Equipment Officers.—April 9th: Sec. Lieut. T. E. Robertson, S.R.; Sec. Lieut. J. W. Griffith, S.R.; Sec. Lieut. C. P. Ogden, S.R.

SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieuts. (on prob.) confirmed in rank: J. O. Cooper, R. H. S. Mealing. To be sec. lieuts. (on prob.): K. K. Horn, April 15th. C. C. Godwin, April 23rd. C. Barber, May 3rd.

\* \* \*

From the "London Gazette," May 5th, 1915.

WAR OFFICE, MAY 5TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—CENTRAL FLYING SCHOOL.—Lieut. (temp. Capt.) R. P. Mills, R.F., a flight com., Military Wing, to be an instructor, vice Lieut. (temp. Capt.) Lord G. Wellesley, Grenadier Guards, April 22nd.

\* \* \*

From the "London Gazette," May 6th, 1915.

Supplementary to Regular Corps. R. Flying C.—Mil. Wing.—J. D. Dinneen to be sec. lieut. (on prob.). April 13th.

\* \* \*

From the "London Gazette," May 7th, 1915.

ADMIRALTY, MAY 5TH.

ROYAL NAVAL AIR SERVICE.—J. Bird to be flight lieut. April 30th.

WAR OFFICE, MAY 7TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers.—April 14th: Lieut. B. S. Sandeman, 2nd Highland Brig., R.F.A., T.F.; Lieut. E. F. W. Cobbold, 7th Cheshire, T.F. April 16th: Capt. D. H. Macdonell, D.S.O., R. of O.; Sec. Lieut. M. T. Sandys, R.A., and seconded, April 22nd: Sec. Lieut. R. H. S. Mealing, S.R.; Sec. Lieut. P. G. Ross-Hume, 6th K.O.S.B., and transferred to general list, New Armies; Sec. Lieut. J. O. Cooper, S.R.; Temp. Sec. Lieut. M. K. Cooper-King, 7th (Pioneers) York and Lanc., and transferred to general list, New Armies; Sec. Lieut. L. M. Wells Bladen, S.R., from an asst. equipment officer, April 27th.

MEMORANDA.—Temp. Capt. H. Dobell relinq. commn. on appointment to the Royal Naval Air Service, April 20th.

\* \* \*

From the "London Gazette," May 8th, 1915.

His Majesty the King has been graciously pleased to approve of the appointment of the undermentioned officer to be Companion of the Distinguished Service Order, in recognition of gallantry and devotion to duty whilst serving with the Expeditionary Force:—

LIEUTENANT LANCE GEORGE HAWKER.

Royal Engineers and Royal Flying Corps.

For conspicuous gallantry on April 19th, 1915, when he succeeded in dropping bombs on the German airship shed at Gontrode from a height of only 200 feet, under circumstances of the greatest risk.

Lieutenant Hawker displayed remarkable ingenuity in utilising an occupied German captive balloon to shield him from fire whilst manœuvring to drop the bombs.

\* \* \*

WAR OFFICE, MAY 8TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying officers to be Flight Commanders.—Lieut. (temp. Capt.) J. E. Tennant, S. Guards, March 17th. And to the temp. capt. April 17th: Lieut. C. E. C. Rabagliati, Yorks L.I.; Lieut. R. L. Charteris, S. Reserve; Lieut. L. G. Hawker, R.E.; Sec. Lieut. M. B. Blake, S.R. April 23rd: Lieut. R. E. Lewis, W. India Regt.; Lieut. C. G. Bell, S.R.

Flying Officers.—April 9th: Sec. Lieut. W. A. Grattan-Bellew, S.R.; Temp. Sec. Lieut. E. E. Clarke, A.S.C.; Sec. Lieut. R. H. Mayo, S.R.

From the "London Gazette," May 10th, 1915.

WAR OFFICE, MAY 10TH.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. lieuts. (on prob.) confirmed in rank: C. D. Fuller, J. C. H. Barfield. To be sec. lieuts. (on prob.): P. D. Robinson, April 6th. D. B. James, April 19th. April 21st: J. P. C. Sewell, C. C. Miles. April 23rd: J. L. Williams, G. L. P. Henderson, W. J. McConnochie, April 26th. April 27th: L. W. F. Turner, R. H. Carr, F. Dunn, E. R. Scholefield.

### NAVAL.

The following appointment was notified at the Admiralty on May 4th:—

ROYAL NAVAL AIR SERVICE.—Mr. R. L. Anderson granted a temporary commission as lieut., R.N.V.R., and appointed to the "President," additional, for duty with R.N.A.S., to date April 25th.

\* \* \*

The following appointment was notified at the Admiralty on May 5th:—

ROYAL NAVAL AIR SERVICE.—The Hon. A. Verney-Cave granted a temporary commission as lieutenant, R.N.V.R., and appointed to the "President," additional, for duty with R.N.A.S., to date April 4th.

\* \* \*

The following appointments were notified at the Admiralty on May 6th:—

ROYAL NAVAL AIR SERVICE.—The following have been granted temporary commissions as lieutenants, R.N.V.R., and appointed to the "President," additional, for duty with R.N.A.S., to date April 29th: A. S. Goodwin, P. J. H. Sumner, F. J. Toulmin, and O. H. Powell.

The following have been entered as probationary flight sub-lieutenants, and appointed to the "President," additional, for R.N.A.S., to date as mentioned: H. G. Henley, L. C. Keeble, and H. A. Bower, May 12th; G. G. Ommamey, May 5th.

\* \* \*

The following appointments were notified at the Admiralty on May 7th:—

ROYAL NAVAL AIR SERVICE.—Mr. F. A. Crispin granted a temporary commission as lieutenant, R.N.V.R., and appointed to the "President," additional, for instructional duties in the R.N.A.S., to date May 1st; and Mr. R. Griffin, also granted a temporary commission as lieutenant, R.N.V.R., and appointed to the "President," additional, for duty in the R.N.A.S., to date May 4th.

Messrs. J. H. Hardman and J. Simson granted temporary commissions as sub-lieuts., R.N.V.R., and appointed to the "President," additional, for R.N.A.S., to date May 3rd.

The following have been entered as probationary flight sub-lieuts., and appointed to the "President," additional, for R.N.A.S., to date as mentioned: H. de Verd Leigh, May 6th; L. W. Hodges, R. M. Clifford, F. R. Laver, C. Perrett, and W. L. Graham, to date May 12th; also J. D. Hume (for temporary service), to date May 12th.

\* \* \*

The following appointments were notified at the Admiralty on May 8th:—

ROYAL NAVAL AIR SERVICE.—Acting Com. F. C. Halahan, graded in R.N.A.S., as acting wing com., to date May 6th.

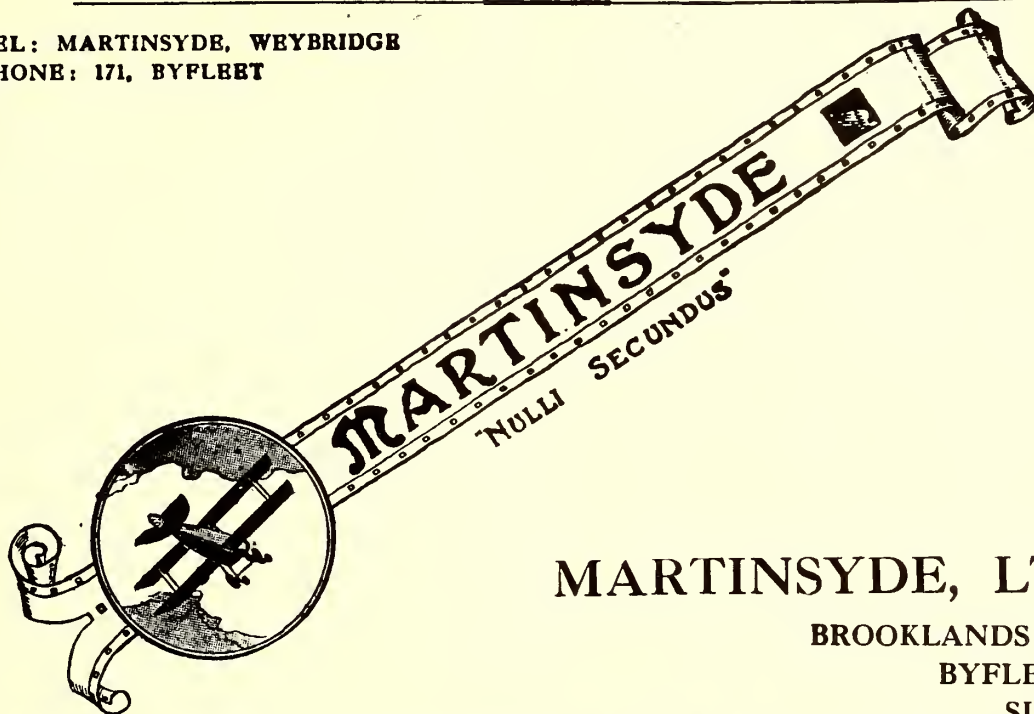
Mid. R.N.R. D. J. Sheehan, transferred to R.N.A.S., as prob. flight sub-lieut., and appointed to the "President," additional, for R.N.A.S., to date May 7th.

Messrs. J. R. Blunt and B. E. Annoot, granted temp. commissions as sub-lieuts., R.N.V.R., and appointed to the "President," additional, for duty with R.N.A.S., to date March 1st and April 28th respectively.

Petty Officer L. A. Hervey and Mr. C. W. A. Critchley-Salmonson entered as prob. flight sub-lieuts. for temp. service, and appointed to the "President," additional, for R.N.A.S., to date May 12th and May 5th respectively.

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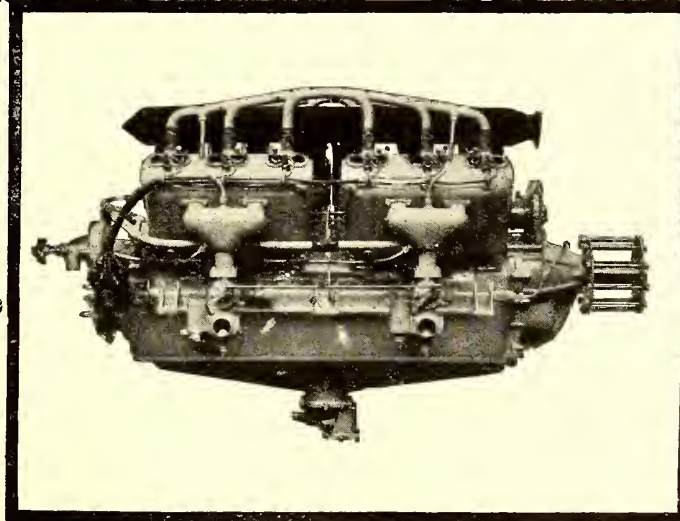
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The following appointment was notified at the Admiralty on May 10th:—

ROYAL NAVAL AIR SERVICE.—Mr. J. C. Croft entered as probationary flight sub-lieutenant and appointed to the "President," additional, to date May 12th.

\* \* \*

The Secretary of the Admiralty announced the following casualties to officers during the operations in the Dardanelles:—

#### KILLED IN ACTION.

Reported under date May 3rd:—

Lieut.-Com. (temp.) James R. Boothby, R.N.V.R., Armoured Car Division.

#### WOUNDED.

Reported under date May 3rd:—

Sqdn. Com. Charles E. Risk (temp. Maj., Royal Marines), Armoured Car Division.

Reported under date May 4th:—

Lieut. Stanley Lambert, R.N.V.R., Armoured Car Division.

\* \* \*

The Secretary of the Admiralty announced on May 6th the following casualties to officers during the operations in the Dardanelles:—

#### WOUNDED.

Reported under date May 4th:—

Lieut. Com. Stanley Lambert, R.N.V.R., Armoured Car Division (previously reported as Lieut. Stanley Lambert).

Sub-Lieut. Lord Loughborough, R.N.V.R., Armoured Car Division.

\* \* \*

The Secretary of the Admiralty announced the following casualty during the operations in the Dardanelles:—

#### WOUNDED.

Reported under date May 5th:—

Sub-Lieut. Lionel W. Huntington, R.N.V.R., Armoured Car Division.

\* \* \*

The Secretary of the Admiralty issued the following statement on May 8th:—

The statement published recently by the German authorities that a British submarine had been sunk in an encounter with a German airship is false; on the contrary, the submarine has now returned uninjured, and reports that she damaged the airship by gunfire and drove her off.

The fact that the action took place rather upsets the argument of the "Morning Post's" "airmanship expert" that such an action is impossible. If an airship were equipped with machine-guns and really clever marksmen behind them it should be possible for her to keep down the fire of quick-firers or machine-guns on the submarines, while manœuvring for a favourable position from which to drop bombs. Owing to the airship having at least twice the speed of a submarine, and three times the speed of most of them, it would have immense advantage in manœuvring, and would also confuse the shooting of the submarines by varying its altitude. The safest thing for a submarine to do when attacked by an airship is to get out and get under.

\* \* \*

Lieut.-Comm. Boothby, R.N.V.R., killed at the Dardanelles, was the brother of Commander Boothby, R.N., formerly one of our leading airship officers, and now commanding the Armoured Car Division.

\* \* \*

So far, "questions in the House" have elicited the fact that no destroyer escort was sent to meet the ill-fated "Lusitania." Doubtless, the Admiralty had good reason for not providing such an escort. But it does not seem to have been asked whether there is a regular seaplane patrol along the South Coast of Ireland, on the look-out for submarines, such as that run by Lieut. Gran among the inlets and fjords of Norway, nor has it been asked if not why not? There seems to have been a suspicion of submarine supply depots on the indented coast of Cork for many months, for an infantry officer stationed there in October or thereabouts told the writer that men of the Royal Irish Constabulary searching at night along the coast

had been knifed or clubbed for their inquisitiveness. Knowing that district fairly well the present writer is by no means prepared to disbelieve the story, for West and South-West Cork beyond Kinsale Junction is constitutionally "agin" any form of government.

\* \* \*

A Belgian, recently escaped from Antwerp, and now with one of our aircraft firms, was in the Cockerill Yard when the two R.N.A.S. pilots smashed the submarines on the slips there. He states that in order to place his bombs absolutely accurately one pilot actually flew underneath a big steel arch, used, presumably, for a travelling crane, and dropped his bombs on to the right spot from a height of only thirty or forty feet. He then climbed rapidly, and seeing a crowd of soldiers rush into an open space and fire at him he turned back, dived, and dropped a bomb into the "brown" of them, killing thirty or so at once. The performance seems to have been one of the pluckiest deeds of the war, and one hopes such verification of it will be received as to entitle the pilot to some special distinction.

\* \* \*

In the third article from the special correspondent in the Dardanelles, Mr. E. Ashmead-Bartlett, who, with the consent of the British Government, is representing there certain London newspapers, the following illuminating passage occurs:—

"Eastern Mediterranean, April —. When your ship forms part of the squadron which is off duty you lie at anchor off Tenedos, and have little to do except to watch the aeroplanes soaring upwards from the aerodrome—a fine natural piece of ground, which might have been specially designed by Nature for the arrival of Commander Samson and his gallant crowd of aviators, observers, and mechanics—and then disappearing towards the Straits, which are only eight miles away."

It is interesting to hear that the shoregoing section of the R.N.A.S. has found a satisfactory landing ground, but one cannot help feeling a trifle surprised that the name of the officer commanding that section should have been passed by the Censor. From a purely military point of view one would assume that the absence from the Western war area of an officer of whom it is alleged that the German authorities have put a price reported to be £1,000 on his head would have been concealed with some care, if his value for intimidatory purposes is as high as the alleged reward suggests. Also, from a Service point of view, it seems a trifle unusual that the name of an officer should be mentioned in this way when the names of officers of equal or superior Naval rank, who have done distinguished service in the Dardanelles, are, very properly, withheld until such time as they are made known in a fitting manner in the official list of honours given for services rendered.

One had rather hoped that the new conditions prevailing in the Western war area had put a stop to the unseemly and undignified booming of the Royal Naval Air Service which formerly emanated from that quarter, and one regrets to see a recrudescence of this very un-Naval proceeding coming out of the East.

\* \* \*

Officers who are not averse to seeing their names in print otherwise than in Casualty or Honours Lists are recommended to study the following paragraph:—

Wimbledon Town Council, at their meeting last month, unanimously decided to offer the honorary freedom of the borough to Captain J. H. S. Dimmer, V.C., who gained the Victoria Cross by his gallant work with a machine-gun against the Prussian Guards near Zillebeke. The Town Clerk (Mr. A. Steele Sheldon) conveyed the decision to Captain Dimmer with a view to his fixing the date for the ceremony. He has now received a letter from Captain Dimmer declining to accept the honour, the offer of which he appreciates. "*Too much publicity*," he adds, "*has been given to my name already, and has caused me a great deal of worry and annoyance. To accept this freedom would only bring further publicity, and such is not in accordance with the traditions of the Service.*"

[The italics are not in the original letter, but have been introduced to emphasise an important point.—Ed.]



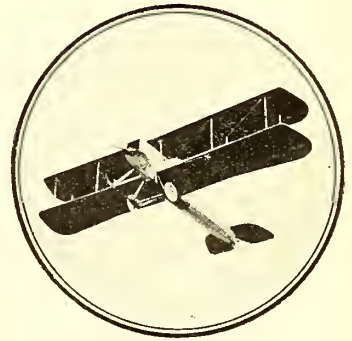
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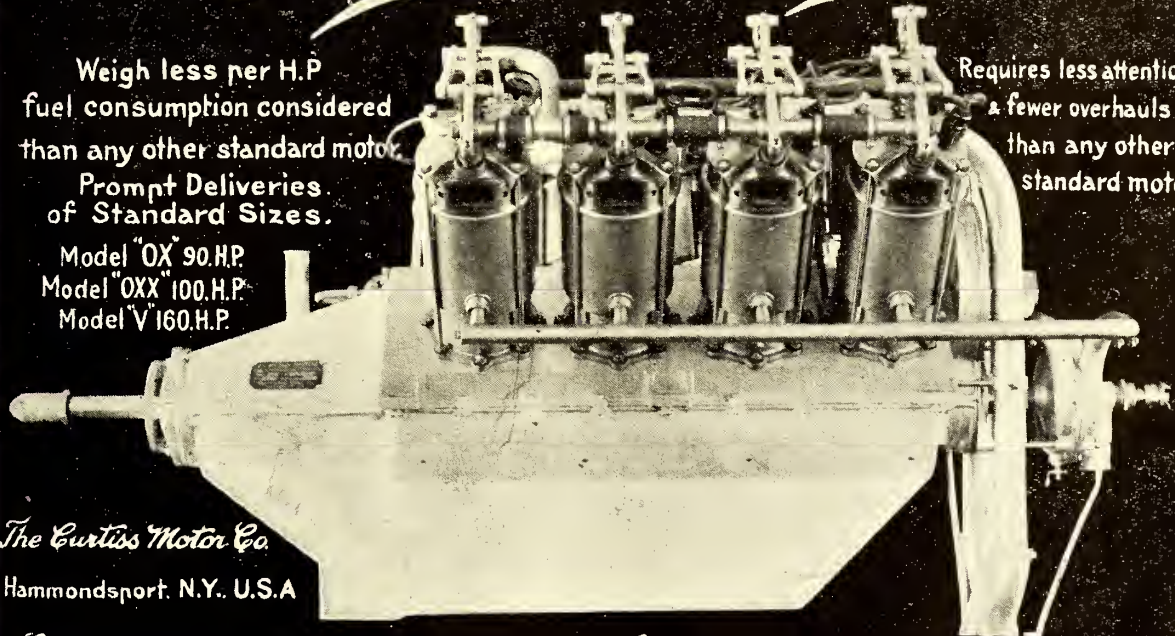
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It has been suggested by certain Naval aviators that it might be well if our authorities, Naval or Military, set to work to form an Anti-German Aircraft Corps, in view of the fact that detachments, both at home and abroad, of the existing Anti-Aircraft Corps display such extreme impartiality as to the nationality of the aircraft against which they operate.

#### MILITARY.

The Field-Marshal Commanding the British Forces in France reports as follows under date May 9th:—

3. Our airmen made successful attacks on St. André railway junction, north of Lille, and on the Canal Bridge at Don. Fournes, Herlies, Illies, Marquilles, and La Bassée were also bombed.

\* \* \*

The following appeared in the Casualty List under date May 2nd:—

#### MISSING.

Crosbie, Capt. D. S. K., Argyll and Sutherland Highlanders and Royal Flying Corps.

Gladstone, Lieut. C. A., General List, attd. Royal Flying Corps.

\* \* \*

The following casualties in the Expeditionary Force are reported from General Headquarters under date May 3rd:—

#### WOUNDED.

Lieut. C. W. Anstey, South Wales Borderers and Royal Flying Corps.

Sec. Lieut. C. F. O. Master, Wiltshire Regiment and Royal Flying Corps.

Lieut. N. C. Spratt, Royal Flying Corps.

\* \* \*

The following casualty in the Expeditionary Force was reported under date May 4th:—

#### WOUNDED.

Master, Sec. Lieut. C. F. O., 3rd Wiltshire Regiment, attached 2nd and Royal Flying Corps. [This is evidently an amplification of the notification in the previous list.—Ed.]

\* \* \*

An inquest was held at Haslar Hospital on May 4th on Flight Sergt. Thomas James McCudden, R.F.C., who died as the result of a fall in an aeroplane at Fort Grange on May 1st. The evidence was to the effect that the engine was running badly, the witness assuming that it was owing to the flooding of the carburettor, and the low speed caused a side slip.

Sergt. McCudden, who was piloting, had taken Lieut. Read up for instruction. If he had been 1,000 feet up instead of only 100, it was thought that he could have regained his balance. A verdict of accidental death was returned. The Coroner stated that Lieut. Read was making a good recovery.

Sergeant McCudden was born on April 3, 1891, at Chatham, and took his certificate, No. 269, on a Bristol biplane at the old military air station on Salisbury Plain on August 13th, 1912. He was one of the earliest N.C.O. pilots and was always regarded as a very capable flier. He was very popular with officers and men, and his squadron will feel his loss deeply.

\* \* \*

The following appeared in the obituary columns on May 5th:

UPTON.—On 3rd May, at Tidworth Military Hospital, of pneumonia, Richard, Master Mariner in the Straits S.S. Service, L.F., and of the Royal Flying Corps, third surviving son of the late Capt. Upton, of the Sherwood Foresters, and P. and S.D. of H.M.'s India Office, and grandson of R. C. Strelley, of Oakerthorpe. Funeral, Saturday, Streatham Cemetery, three o'clock. Legion of Frontiersmen, please note.

Richard Upton was born on September 11th, 1880, at Finchley, and took his certificate, No. 883, on a Grahame-White biplane at Hendon, on August 26th, 1914. At the time of his death he was on probation with the R.F.C.

\* \* \*

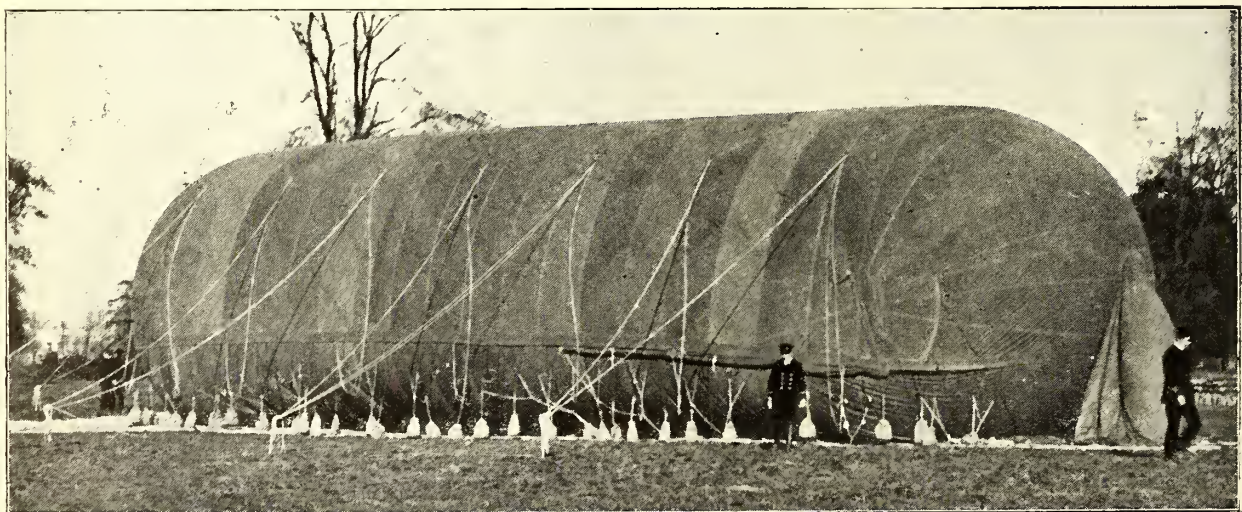
The body of Mr. W. B. R. Rhodes-Moorhouse, Second Lieutenant Royal Flying Corps, who died of wounds received while dropping bombs on Courtrai, was brought to Dorset and was buried on May 5th in the grounds of his father's residence, Parnham House, Netherbury. The grave is at the top of a grove where Mr. Moorhouse had hoped to build a house.

\* \* \*

The Military biographer of the "Morning Post" writes:—Lieut. Charles A. Gladstone, Intelligence Department, attached to the Royal Flying Corps since November last, is reported by the War Office missing since April 30th. Lieut. Gladstone, who was a master at Eton College and an Eton Blue, joined the Intelligence Department at Headquarters as interpreter in August last year. He was also employed as a motor-cycle dispatch carrier until November, when he joined the Royal Flying Corps. Lieut. Gladstone is a grandson of the late Mr. W. E. Gladstone, being the second son of the Rev. S. E. Gladstone, of Manley Hall, Cheshire. His elder brother, Mr. A. C. Gladstone, has joined the 2nd Battalion 9th Gurkha Regiment, and the third brother, Mr. S. D. Gladstone, who also is in India, has joined an Indian Native Cavalry Regiment.

\* \* \*

Without being charged with unduly advertising any individual, one may perhaps draw attention to the unusual circumstance of an officer appearing within one week in the Casualties as wounded—one hopes not seriously—in the Honours List as receiving the D.S.O., and in the "Gazette" as being promoted to Flight-Commander and Temp. Capt.



A Kite-Balloon bedded out for the night, at the Château X.— A photograph of a balloon of similar type in like position has recently been published in numerous papers as being a "wrecked Zeppelin."



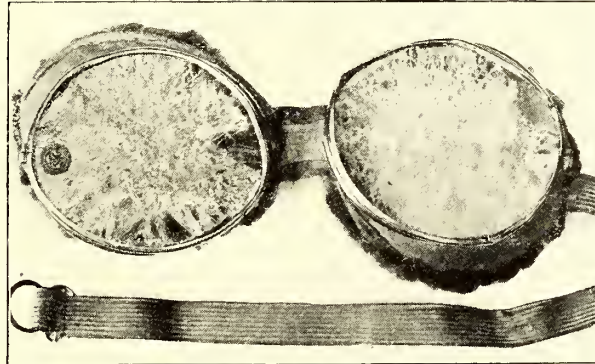
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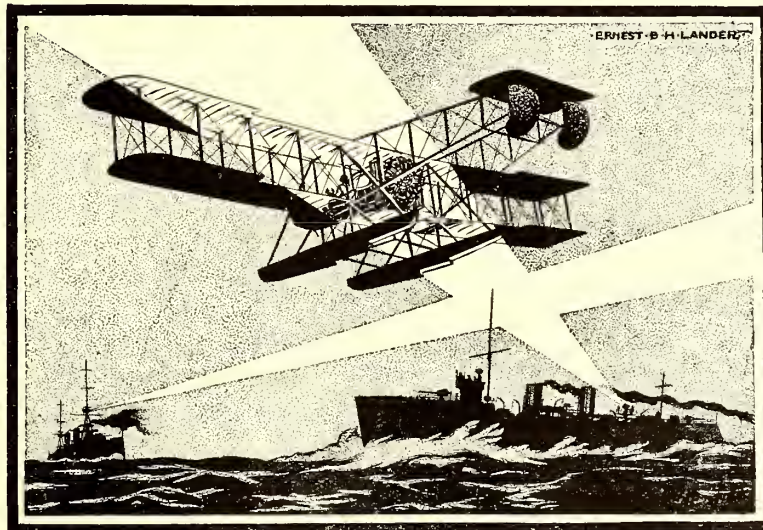
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The latest among the former Hendon aviators to obtain a commission is Mr. Norman Howarth, who was recently gazetted to the 3rd Batt. The King's Own Royal Lancaster Regt. At the outbreak of war he was appointed pilot-instructor in the Royal Naval Air Service. One hopes to hear of his being seconded for duty with the R.F.C., for, as a capable and steady pilot, he should be of considerable value.

\* \* \*

#### AT SEA.

A Berlin telegram to Amsterdam, dated May 4th, states that the German Admiralty Staff issued the following statement:—

On May 3rd a German naval airship was engaged with several British submarines in the North Sea. Several bombs were dropped from the airship, and one hit and sank a submarine. The airship was bombarded by guns from the submarines without being hit, and returned safely.

[This statement was also contained in the Berlin "wireless" report, which is generally unreliable, though the German official Military and Naval reports are exceeding accurate, except when an important political purpose is served by lying. The British Press Bureau does not as yet confirm it.—Ed.]

\* \* \*

Two Lowestoft trawlers reported on May 4th that on Monday evening, when 20 miles E.N.E. of Lowestoft, they saw a Zeppelin making for our coast. The airship was for nearly an hour within close range of the vessels. A strong wind then arose and after some time the airship turned and went off to the eastwards, evidently for home. Her course when first seen would have brought her somewhere between Great Yarmouth and Cromer. The story may or may not be true, but on the face of it there is every semblance of truth. At any rate, it demonstrates the value to us of our highly unreliable weather.

#### FRANCE.

The official notes issued in Paris on May 5th:—

Our communiqués have often reported the success of our aeroplanes in bombardment. The pilot is sometimes able to observe the result himself by the noise of explosions or by smoke from fires, but such observation is hurried and incomplete. It has been possible, owing to information from prisoners, to acquire better knowledge of the destruction effected. The news thus obtained confirms the importance of the bombardments, and shows that our aviators display as much precision in dropping bombs as courage in flying.

On March 22nd, in the bombardment of Briey station and the junction of the lines to Conflans, Briey, and Metz, provision depots were destroyed and the line was broken.

On April 15th, in the bombardment of St. Quentin station, the ammunition depot in the goods sheds and 150 trucks (most of them containing benzol) were burnt. The fire lasted from April 15th till the following day. All night the explosions of projectiles could be heard. Twenty-four soldiers were killed.

On April 28th, in the bombardment of Friedrichshafen, the sheds were struck and a Zeppelin damaged.

In the bombardment of the Leopoldshoehe-Lorrach district the station at Haltingen, with the repair works, was destroyed. Two large locomotives were damaged, and all the stores, including munitions belonging to the troops guarding the railway, were destroyed. The railway line was broken.

At Lorrach forty-two Landsturm sappers were killed or wounded, and two aeroplanes destroyed.

At Leopoldshoehe the junction control was hit, and the trains were stopped between Leopoldshoehe and Haltingen.

\* \* \*

A report from Paris states that on May 8th a Taube flew over Montdidier and threw two bombs. One fell near the gasometer without doing damage, and the second killed one person.

\* \* \*

A mutual friend in France, who is closely in touch with military aviation, writes that Adjutant-Aviator Louis Noel has been surprising everyone by his marvellous flying, and has already won on the Maurice Farman an even higher reputation than he had before. He has been doing reconnaissances of very high value. M. Noel has now been promoted to Adjutant—or Sergeant-Major—and so becomes a Sous-Officier or Warrant-Officer.

\* \* \*

An aviator in the French service, who has had much experience, writes of the Maurice Farman:—"I like the old 'Cow' very much now I'm used to it, though it is cumbersome after the little Blériot and slower. It is curious, by the way, how different shells sound in the Maurice. The noise of the motor is deafening, especially as I ran for some time without any silencer, and yet a shell bursting quite far off makes a real explosion, and one never hears the queer popping sound one used to in the Blériot. N— notices the same thing, and puts it down to the motor behind leaving the ears more clear, and also, especially, perhaps the blast of a tractor-screw shuts out (or reduces) all sound waves."

\* \* \*

From the "Globe," Toronto, Thursday, April 22nd.—Paris, April 21st.—"A report is current here to-day that William Thaw, serving as a pilot in the French aviation corps, has been killed while reconnoitring around Verdun.

"William Thaw was a nephew of Harry K. Thaw. He took up aviation some years ago and did a great deal of flying in this country before the war."

#### GERMANY.

The communiqué of May 8th says:—

Near both La Bassée and Vitry, east of Arras, a hostile aeroplane was forced to descend.

\* \* \*

The communiqué of May 10th says:—

One of our airships early this morning dropped some bombs on the fortified place of Southend, at the estuary of the Thames.

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**BELGIUM.**

A Reuter telegram from Amsterdam reports that two Zeppelins were seen at noon on May 4th, passing over Beverloo, travelling in the direction of Antwerp. So long as they do not reach the Bakerloo they may be forgiven.

The "Tijd" (Amsterdam, May 4th) reports that the German aerodrome at Ghistelles has been completely destroyed by various aerial attacks.

\* \* \*

It was reported from Amsterdam on May 4th that while the Germans were bombarding Furnes six German aviators co-operated with their artillery. Two of these aeroplanes were brought down, and the pilots, one a lieutenant, were captured.

**TURKEY.**

The Constantinople correspondent of the Associated Press reports via New York as follows under date of the 4th inst. :—

"Our party arrived in the region of the Dardanelles on the night of May 1st, while the town of Dardanelles, which had been burning for thirty hours, was still ablaze. Maidos is also burned, and yesterday the town of Gallipoli was in flames, all by indirect fire from the Gulf of Saros, with ignition shells directed by aeroplanes.

"Yesterday seven ships were seen and heard off Sedd-el-Bahr. Aeroplanes were over Chanak Kale, dropping bombs."

\* \* \*

The "Echo de Paris," May 7th, publishes the following information of May 6th from Athens :—

A British aeroplane from Tenedos flew over the Panderma-Brussa railway near Brussa and dropped bombs, which destroyed a bridge. The Turks fired on the aeroplane, which escaped unhurt. The destruction of the bridge has broken communication between Smyrna and the Dardanelles, and will hold up the movements of Turkish troops and the transport of ammunition.

\* \* \*

The following extract from an article in the "Times" by one who had recently escaped from Constantinople is illuminating :—"A number of aeroplanes have lately been received from Germany. They are to be employed less for scouting or bomb-dropping purpose than in order to neutralise the action of the British and French airmen, to whom the success of the bombardment is said to be largely due.

"These aeroplanes are being put together at the arsenal of Ters-Hane. Rifles, ammunition, and even fortress artillery continually arrive from Germany by way of Bulgaria and Rumania. I saw trucks loaded with ammunition still bearing Rumanian seals, and marked 'via Giurgevo.'"

**SOUTH AFRICA.**

A communiqué issued at Capetown on May 7th announces the arrival in German South-West Africa of several aeroplanes for the Union forces.

The possession of these machines checkmates the enemy in the only department in which hitherto he has had the upper

hand. The exploits of the enemy's aviator (apparently there is only one) have in fact been remarkably effective, though it is known that his machine has been repeatedly damaged.

The officers who are to fly for South Africa include the various indigenous pilots who have been in England during the past year, several of whom have seen considerable active service, with the addition of certain pilots lent by the R.N.A.S

**AUSTRALIA.**

From the "Argus," Melbourne, March 24th.—Australian engineering firms have taken up with enthusiasm the proposal emanating from the Defence Department that aviation engines should be constructed here. (See THE AEROPLANE, March 31st, p. 309, Australian Notes.) As the aviation branch of the Department is growing rapidly and is destined to assume large proportions, it is thought that the inducement to Australian firms to specialise in aviation engine construction is a strong one and that this is so is being proved by the reception given to the Department's proposal. Many inquiries are being received for further particulars of the Department's requirements.

The Department is building a new biplane at Point Cook and is engaging a larger staff of mechanics. It is found in practice that wood for the different parts has to be imported, walnut being required for the propellers and Canadian spruce and English ash for the planes.

**CHINA.**

From the "Overland China Mail," March 20th :—"The military aviation school at Nan Yuan granted flying diplomas to 33 (thirty-three) students at its first examination a few days ago. The school is equipped with 12 biplanes and 2 monoplanes, one of which is Chinese built."

"The Far Eastern Olympic Games" are to be held at Hong Kew's Parks from Saturday, May 15th-22nd. Among a number of competitions for Chinese Boy Scouts is a model "airship" competition, each boy to fly his own "airship."

**JAPAN.**

The "Manchuria Daily News," March 8th, says : According to an official report, the naval aeroplane No. 15, while on a manœuvring flight near Oppama on Saturday morning fell into the sea from an altitude of about 50 metres with Sub-Lieuts. Adachi and Takebe and a FEW sailors. Submarines were immediately brought into use for dragging the neighbouring waters for the sunken aeroplane and crew. The remains of both officers and one sailor were recovered, but they were found to be beyond all medical help. The remains were laid in a coffin and placed on the altar at the Wireless Station for the Naval Aerial Corps. The members of the corps were drawn up in front of the altar when Capt. Matsumura, aide-de-camp to H.I.M. the Emperor, delivered a gracious imperial message to the spirits of the martyrs.

From the "North China Herald" :—A trial flight of the Japanese Army Parseval was carried out at Tokorozawa aerodrome on March 31st. Major Masuda and Engineers Iwaki and Takagi boarded the airship with two assistants, and after twice circling over the ground flew to Kawagoye.



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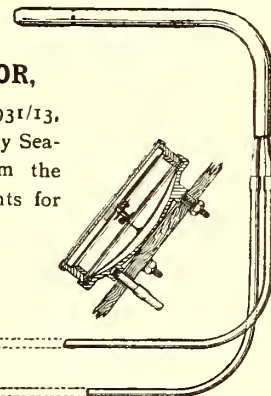
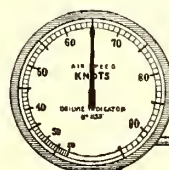
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## ARGENTINA.

From the "Standard," Buenos Aires:—Aviation.—Among the new arrivals from Europe is the well-known Swiss aviator Domenjoz, who created such a sensation in this capital about the "loop" manœuvres at the Stadium a year ago by executing his "looping Palermo." After leaving Buenos Aires, Domenjoz made an extensive tour in the provinces and neighbouring republics, after which he returned to France, where he continued his exhibitions until the outbreak of the war. Having a decided sympathy with the Allies, Domenjoz offered his services as pilot to the French Government, which, on account of his nationality, were not accepted. In view of this proposal Domenjoz, having obtained the necessary authorisation from the French Government, effected the purchase of a splendid new special "looping-the-loop" Blériot monoplane fitted with a 60-h.p. Gnome motor. His new apparatus is coming to Buenos Aires in the course of a few days by the s.s. "Amiral Tedé."

At the Quilmes Aerodrome regularly Pilot-instructor Sanchez, accompanied by a number of enthusiastic pupils, makes a number of flights over the neighbourhood of the aerodrome in the school Farman biplane.

Work is actively proceeding at present in the "tallexes" of the military aerodrome at Palomar putting together the new monoplane, Morane-Parasol, of 80 h.p., which arrived a few days ago. The apparatus is a gift to the military school from the ladies of Mendoza. The tardy arrival of the monoplane is due to the vessel carrying same being detained by warships.

## U. S. A.

The Navy Department, Bureau of Supplies, has invited tenders for the construction of one or two "vedette" type airships. The conditions laid down are as follows:—The closing date for tenders was April 20th. These machines which are to be assembled and inflated and tested at Pensacola, Fla., must be not more than 175 feet long, 50 feet high and 35 feet wide, carrying a useful load of at least 2,000 lbs. The car must be able to float and move through the water with a crew of 8 men. There must be two reliable engines able to propel the balloons at 25 m.p.h. or more, using double propellers of the (Willows) swivelling type to enable the propellers to aid in rising, descending or manœuvring. The screws must show an efficiency of at least 70 per cent. at full speed.

A complete instrument board with chart holder, pressure gauges, chronometer, altitude and aneroid barometers, barograph, air speed indicator, statoscope, inclinometer and compass must also be provided.

The hydrogen gas bag must be fitted with at least two balloonettes and means of trimming by the use of the same acting in conjunction with the pitching controls, at least two ripping panels, one at the bow, one at the stern, and a substantial and secure means of mooring the machine to a mooring post by the nose in a wind 50 per cent. more than the speed of the ship, without injury. The gas leakage when housed must not exceed one per cent. in 24 hours. All control leads must be double, having one wire and one cable.

Dirigibles differing from those specified will be considered providing the differences are clearly noted in the data and the design has sufficient merit to warrant consideration.

Proper protection against the weather must be provided by portable covers for engines and cockpits, by approved suitable paints and varnishes on the interior as well as the exterior woodwork of spars, control surfaces, car, etc., by metal plating or the use of non-corrosive metals in construction.

The dirigibles, with full load, instruments, passengers, ballast and accessories, must be capable of starting from water, ascending at least 3,000 feet without disposing of ballast, and be able to descend at 6 feet per second or faster without injury or danger to the structure.

The speed for a two-hour duration flight in a closed circuit must be 25 m.p.h. or greater. In five speed runs that speed shall be equalled or exceeded, meanwhile the horizontal stability shall be carefully noted. It must maintain its course across a 15-mile puffy wind with reasonable accuracy, the dirigible is to be brought to and fastened to the mooring post for a one-hour test in a wind of 15 m.p.h., after which it shall resume its course back to the hangar to be housed without injury. The number of men required to handle the machine will also receive consideration.

One or two machines are to be delivered within the shortest time possible, delivery guaranteed, at the Naval Aeronautic Station, Pensacola, Fla. The time of delivery will also receive due attention in the awarding of the contracts.

\* \* \*

The Aero Club of America is now organising a scheme for the formation of an aeronautical reserve for the States Militia. The proposal is that each State shall start a public subscription and enter one or two machines for competitive tests to be held locally between Independence Day, July 4th, and Columbus Day, October 12th, 1915. Official entries are invited from the Governors of States. Wealthy members of the Ae.C.A. and associated clubs will offer prizes for the different best performances. The tests seem to be mainly on the lines of the old-time French aviation meetings, namely, for distance, duration, height, weight-carrying, and so forth. Special sections will be confined to waterplanes and twin-engined machines.

As far as can be gathered, the machines and pilots which survive the competition will be at the disposal of the Government fifteen days a year. A special prize will be offered for the most practical mail-carrying demonstration.

The scheme, if properly organised, should present distinct possibilities in arousing interest in aviation in America, but as the life of the average aeroplane is generally measured in months, the number of machines that would "show up" for the annual mobilisation would be rather problematical.

## CANADA.

A Reuter Agency telegram from Toronto contains the following cryptic message:—"Twelve recruits have been enrolled in the Government flying school for training airmen for the British Army."

[It is not the custom to train "recruits" to fly, so it is a little difficult to understand exactly what is meant. One wonders whether this is another of the notorious "Captain" Janney's efforts.—Ed.]

## The Invasions of England.

It is reported by various newspapers that four Zeppelins were seen off the English coast on May 3rd, three being together over the Thames. Admiralty operations not unconnected with aircraft of one sort or another may have been responsible for the rumour.

The "Daily Express" says:—"Owing to cloudy weather few people saw the Zeppelins over the Thames Estuary."

Probably, if the weather had been clear and if a 60-inch reflecting telescope had been available the Zeppelins would still have been invisible except to the elect, or elevated, few.

If a denizen of West Minister, Isle of Sheppey, is to be believed, the rumoured increase of the Zeppelin output may be accounted for by a new "budding-off" process invented by Count Zeppelin. The indigenous seer says:—

"As I stood watching it the airship appeared to divide into two. . . . Immediately behind them a third Zeppelin came out of the clouds. All three airships were travelling in close company. They headed away over the North Sea."

The fourth ship was reported by a trawler 20 miles E.N.E. of Lowestoft, and may have been real, even if not German.

The most remarkable person yet discovered is a gentleman who said that he recognised an airship by comparing it with what he had seen on a Government poster.

\* \* \*

The town of Southend was visited by a Zeppelin about 3 a.m. on May 10th. Approximately 100 bombs, presumably of small size, were dropped there and on the surrounding district. Four houses were burnt and six others damaged, which, considering the closely built nature of the town, is distinctly poor shooting.

Mrs. Whitwell, a woman of about 50 years of age, was overcome by fumes and burnt to death in her house. Her husband made a heroic effort to rescue her after having already rescued his invalid daughter.

As usual, the population ran out into the streets to see the airship, and by some strange chance no one was hit either by bombs or by projectiles from guns. The bombs were apparently all incendiary and not high-explosives.

It is stated that an aeroplane was seen in the course of the day, presumably in search of the airship.



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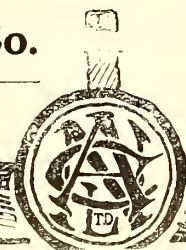
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## FROM DENMARK.

THE AEROPLANE'S Danish correspondent writes :—

Several times one has been able to read between the lines of reports by alien war correspondents the surprise expressed of the Germans sticking to the use of "sausages," their "drachen balloons"; thus the following report may be of interest, distinct clearing the use—and the limits—which can be had from this aerial weapon of war equipment, written by a German officer who took part in the artillery fights on the Eastern French front by Vogeserne; it runs: When our airship's department passed the French frontier in the Vogesern our field batteries and a heavy 10 cm. battery spewed constant their shells over a ridge of hills, down the foot of which they were dug; the result was, however, but miserable, the enemy knowing his country well and having placed his batteries in two positions, which could not be destined distinct, and thus not taken under fire on account of the intervalling mountains. The one position is situated in an impenetrable rocky wood to South, the other one behind a ridge of hills to South-West, being walled in the mountains with beton. And even must be added that the best of French marksmen, the Alpine chasers, guard these positions from frontal attacks. Our kite-balloon, of the Parseval-Siegsfeld type, is shown its place of ascent, hanging one hour later in the air with its lookers-out. From the ground to the gondel, as well as to the nearest battery, there is telephonic connection.

The enemy starts at once shooting at the kite-balloon with shrapnells, aiming at a good direction, but firing too short. Whereupon the shells strike down just by our heavy battery, from which we are only moved a 1,000 yards. Thus we are compelled to change our ground of ascent several times, till next day we find a point with sufficient view of the country and where we can stay without objections from the commander in charge of the battery. Our first task was now to contend with the French batteries in the rocky wood. The air is clear and the light favourable. By help of his good telescope the observer sees from the gondel the fire lighten twice from the ordnance mouth on the western side of the hill 697; so this is the mark, exactly 8 km. off.

The battery having been announced, the four cannons are adjusted and deliver a volley, single shell shots being fired afterwards. The observer finds out the point of down-stroke of each shell by help of the explosion dust, informing the battery at once of his observations through the telephone. Below us a beam of fire rushes out of the German ordnance, then we hear the cannon boom a dull roaring, next the whirle of dust is observed, followed after 24 seconds by the explosion of the bursting shell.

The first down-strokes lie all too far to right, the distance being corrected after 15 single shots. Two subsequent volleys go down then behind the mark in the rocky wood, on its western slope, as we cannot see the effect. Still three volleys and the German shells hit the mark. When an awful shooting commences till the whole of the hill 697 is but a big grey cloud of smoke. The French battery in the wood is thrashed and made silent.

But yet the artillery fights continue for many days and still we have not engaged the French mountain batteries. Each time our kite-balloon ascends one of them fires shrapnells at us, but always at least 500 metres too short, as the enemy has not found out exact the place of ascent. At length we find out, in similar way as last time, behind the mountain in South-West, the two points where the mountain battery has been walled in. So we direct once more the heavy battery fire against the marks supporting us to photographic destinations of points.

But now a French Blériot monoplane flies above the kite-balloon at a height of 6,000 feet, and half an hour later a hostile shell falls down near to the winch round which the cable of the balloon is wound. A second shot explodes in the air not far off our kite-balloon, a third one a little farther off. The French aviator has found out our position in the most excellent way. A few minutes afterwards the kite-balloon has got hoisted down and the winch on its car, together with the hydrogen transportable works, are moved so far to the side that the immediate danger to our materials is over.

A late Feldpost letter, sent by a flying officer to and published by the "Neuen Badischen Landes-Zeitung," runs :— On a day late in 1914, our L.V.G. biplane is ready for start at half-past eight in the morning; the day is a clear winter one of 5 degrees cold, so we are wrapped up in warm cloths, my aviator, Oberlieutenant F., and I as an observer. The sun rises just above the hill behind which is the enemy—wonder if he is preparing for a flight too. Our task is to find out his artillery and to photograph it. Well, the weather is fine, the engine starts, a nodding by the head to my aviator, and off we go. The air carries well, in 30 minutes we have risen 4,500 feet in fine circles behind the front, the mist near the ground clears off, the conditions seem to turn out best, the cold is only very perceptible, 15 degrees below zero. After a short time some bursting points appear in front of us; they must come from our own troops. I give the sign, and the shooting stops at once.

"We have now passed the ridge of hills; below us the theatre of war is stretched out; there are lightnings in the wood. Quick the map to hand to draw in, the hostile artillery has got found out by the fire at the gun-mouths. And here are new trenches, which must have been dug during the night. I rise upon the engine cowl and take a photograph. The whole country is crossed through and through by trenches. I take a further series of photographs; my aviator pilots the aeroplane masterly; I conduct with the hand (to get the part of the country which I will photograph at the right angle to the sun), and each movement of my hand Oberlieutenant F. lets the aeroplane repeat—each bank is carried out just as an automobile goes through the turns. Now we search the woods from above—and I can easily discover artillery notches, for the shooting stops on the side of the Frenchmen not to betray them as we approach.

At X I see strong defences with heavy artillery, which I photograph as well as the advanced trenches. I give Oberlieutenant F. the token to bank to left, while I change plates, when he knocks me suddenly. F. shows upwards behind us to left a French aeroplane and some 300 metres higher on the sky than we. I understand the situation at once, change quick the camera for the carbine and turn to be front to the enemy.

The monster plunges down at us, starting a violent fire with his machine-gun. Tick-tack, tick-tack . . . already the bullets whizz round our ears, steady sounds the pisch, pisch, pisch. Now I can see distinct the Frenchman behind the gun, a black devil smiles at me—the distance between us is scarcely 20 metres. It looks as if he intends running just into us. I aim, fire three times, and suddenly the French aeroplane dives, banking to right, while F banks desparate to left to avoid a collision. I fire still, but the French machine has quite disappeared. Laughing, I look at my dear friend F., who points anxious at the tachometer with its irregular movements. I go through all parts, but cannot find any damage from the shooting. The swinging had been caused by the big over-loading, when F had let the engine turn at 1,500 revolutions to gain the utmost speed, which costs generally the loss of the propeller. Suddenly I remember my task to be photographing and so point at the object. First F. looks amazed at me, then he nods and we continue our interrupted flight. [The italicised phrases are worthy of note.—Ed.]

Then we returned and Ekzellenz —, further the commander, Colonel von —, and many more, praised us most cordial. In shaking hands with me Count S. said: "You successful soul, you are the first whom I envy really." Captain von T. asks for a report then, and as I have learned, the leading officer of the staff will inform the commander to-day on the base of our photographs, which will reach even the headquarter.

And next night I kept dreaming of that aeroplane, nicknamed 'The Terror of the Peasants,' on which I had revenged for much harm done to us, and for ever I shall remember the smiling face of the Frenchman."

\* \* \*

The Swedish aviator Björklund, who flew last year at Brooklands and Hendon on his single-seated Blériot-Gnome, 50 h.p., has sold his monoplane the other week to the Danish army after one-hour's test flight at a height of 3,000 feet; the selling price was £333.

## The Ships that Pass in the Night.

BY W. L. W. and C. G. G.

The various recent Zeppelin demonstrations over England and the plentitude of amorphous "news" which has been sent us about Zeppelins and all their works by special correspondents of newspapers rather more than less at the back of the front, by "experts" at Romanshorn on the Swiss side of Lake Constance, and at Geneva, and by the German Wireless Bureau, couched in terms either of scorn for their impotent hugeness or in expressions of open-mouthed stupefaction at their latent possibilities, gives one to think that a review of the labours of the engineer whose name they carry may perhaps justify the excavations involved in its preparation.

In 1898 Count Ferdinand von Zeppelin, a retired cavalry general in the German army, formed a private company having as its object the development of a new type of airship the possibilities of which he had long contemplated.

Two years later Zeppelin No. 1, the result of much patient experiment and research, came from its shed. In general appearance, at any rate, it was not unlike its successors, so that a description of one of the more modern vessels will convey an idea at least of the more prominent features of these airships as a class.

### The Design of a Zeppelin.

A Zeppelin may be briefly described as a long tubular vessel with sixteen sides and oviform ends (the nose being slightly blunter than the tail end), with a "V"-shaped keel running along its underside, and two cars, or gondolas, depending from points more or less equidistant from the middle and ends of the ship. The cars contain engines which drive propellers attached to the sides of the main hull or gas-container, and accommodate the crew. Vertical and horizontal rudders placed at the stern of the vessel control the vertical, horizontal, and lateral direction of the airship. In the earlier models a sliding weight was employed to trim the ship longitudinally.

The frame of the hull is composed of sixteen longitudinal girders of trellised metalwork held parallel with one another by about eighteen equidistant sixteen-sided polygons of the same material—aluminium being chiefly used. These polygonal hoops are braced across and across by diagonal stays, thus forming flat transverse walls which divide the girderwork tube into a number of compartments of roughly rounded sections.

Over the whole of this frame and across the lateral partitions is stretched a network of fine ramie fabric which holds in position, and receives the lift from, the cheese-shaped gas-proof sac or container which neatly fits each compartment. Outside this network, and separated from it by an air space, is a covering of heavy weather-proof fabric, forming the visible walls of the airship.

The air-space between the gas-sacs, or ballonets, as they are generally called, is designed to minimise the risk of fire and to act as a blanket to keep the interior of the airship as nearly as possible at a uniform temperature. A sudden change of a few degrees naturally has an enormous effect on so large a volume of gas, and the result of a sudden contraction or expansion of the hydrogen would endanger the effectiveness and even the safety of the airship.

The idea of dividing the vessel into compartments has a threefold object—namely to secure rigidity in construction, to localise gas leakage, and to relieve the end of the ship from excess lift and upward pressure should it chance to rear up or dive obliquely.

Four propellers are mounted on brackets on the sides of the gas-vessel, one on either side of each car, from which they are driven through shafts and bevel reducing gear.

The vertical and horizontal control planes are worked from the leading gondola, which, incidentally, is actually a boat that will, with its fellow, support the airship on the surface of the water. In the modern ships the middle section of the central keel is enlarged into a cabin to accommodate passengers and stores—and sometimes bombs. There is an elaborate arrangement to make it possible to transfer gas from one compartment to another to "trim ship."

### Zeppelin 1.

The first Zeppelin was launched from its floating shed at

Friedrichshafen on Lake Constance on July 2nd, 1900. She was 416 feet in length and 38 feet in diameter. Her volume was 400,000 cubic feet and her weight nine tons. She displaced ten tons of air, and therefore could carry a useful load of one ton. She had 17 gas-compartments and two 16-h.p. motors, each of which drove a 3.77-foot 4-bladed propeller at 1,100 r.p.m.

During the initial flight five men were carried, but owing to a structural mishap the trip was only three and a half miles in length, and the best speed attained was but eight miles an hour, though she attained an altitude of 1,300 feet.

A second voyage was made three months later, and a larger measure of success was accorded the inventor. With the aid of a seven-mile wind the speed at times approached twenty miles an hour, an extraordinary performance in view of the low power of the motors and the comparative bulk of the airship. The trip lasted an hour and a quarter, and an altitude of 1,000 feet was attained. Experiments had then to cease on account of lack of funds, and the ship was dismantled, its life being but six months.

### Unfortunate Zeppelin 2.

It was not until November 30th, 1906, that Zeppelin No. 2 was launched. In general appearance and dimensions she resembled No. 1—in fact, she was probably a reconstruction thereof, but two 85-h.p. Daimler motors driving larger propellers replaced the little 16-h.p. engines. Her life was very short, only three months in fact, for she was wrecked early in her trials. Nevertheless, the experiments were encouraging, for a speed of 20 m.p.h. was reached with the engines giving 36 h.p.

### Luckier 3 and 4.

Undaunted by the failure of these costly experiments, Count Zeppelin set to work to build Z.3 out of the wreck of Z.2. The only important change was the installation of still greater power, and on her trials in October, 1907, this ship flew for 2½ hours at 29 m.p.h., climbing to 2,500 feet with a crew of eleven men.

This undeniable success earned support from the German Government. A new floating dock was constructed on the lake, and late in the autumn of 1907 Z.4 was completed. The new vessel was 446 feet long and 42 feet in diameter. Her capacity was 460,000 cubic feet, her weight 14 tons, and her displacement 16 tons. With a crew of 18 men her estimated range was 1,800 miles. In each car was fitted a 110-h.p. Daimler engine, and for the first time a passenger cabin was built into the central fin. A regular empennage was built into the stern to secure steadiness. The vessel realised all expectations, for she made a 270-mile round trip to Lucerne and back in twelve hours, and the German Government offered to buy the airship for £100,000.

A successful journey of eight hours duration was achieved without difficulty. Count Zeppelin, however, undertook that before delivery the ship should remain aloft for twenty-four hours, and climb to 4,000 feet, besides passing certain unpeccified and secret tests with regard to hydrogen diffusion.

During the following spring a series of voyages was made which evoked the admiration of the whole scientific world. On June 13th, 1908, Z.4 sailed over the Alps to Lucerne against a boisterous head wind and a sharp hailstorm, finally returning in safety after being in the air for twelve hours and travelling 270 miles.

But on August 4th, 1908, she met her fate. During an attempt on the twenty-four-hour Government acceptance test to Mayence and back, a landing had to be effected in a high wind at Echterdingen, near Stuttgart, for repairs, after a 378-mile run. The airship was torn from her moorings, and from some cause, not definitely known, she caught fire and was totally destroyed. But so great an impression had Z.4 created on the public mind that a National Fund was raised, to which the German Government liberally subscribed, and no less than £300,000 was collected. New works were erected, and the old premises with the floating dock on Lake Constance were converted into a Government airship station.



### Reconstructed 3 as Military Zeppelin 1.

By the autumn of 1908, Z.3 had been restored and lengthened, and with two 85-h.p. engines it was estimated that she could remain aloft for 40 hours when travelling at 25 miles per hour. So safe was she deemed that the Crown Prince and Prince Henry of Prussia, who has since taken his aviator's certificate, made trips in her, and the Prussian Battalion of Aeronauts took her over as Military Zeppelin (M.Z.) No. 1. This ship was quite successful, and on one occasion she carried twenty-six passengers.

From March, 1909, onwards, M.Z.I (Z.3), was kept constantly at work and was put to all manner of tests. She was driven through rain and snow, at all elevations up to a mile; she was moored over land and over water, exposed to all sorts of weather, and was taken across country both by day and by night. In fact, the critics of the rigid airship did not know what to think.

On April 1st, 1909, the ship left Friedrichshafen at 4 a.m., and, despite rain and wind, reached Munich, 100 miles distant, by 9 o'clock. The wind rose as the destination was reached, and for a time the ship was blown backwards to leeward, but the Count "wirelessly" to Munich, giving instructions for the formation of a landing crew, and a safe descent was made at Leiching, some distance outside the city. The airship was then pegged down for the night, and next morning flew over Munich, where it landed at the parade ground. Count Zeppelin received a decoration from the Prince Regent, after which the return journey was made down wind.

On another occasion this same airship made a night voyage of 13½ hours, after a day of busy manœuvring. Finally she made the long journey to Metz, where she was stationed as a frontier guard.

M.Z.I was still in existence in August of 1910, which was wonderful longevity for a Zeppelin, but actually she had only spent some thirteen weeks in the air during the three years and more of its career. Finally she passed into oblivion, having probably died of old age.

### Zeppelin 5 as M.Z. II.

Z.5, or M.Z. II, was soon commenced. She had a capacity of 500,000 cubic feet, was 446 feet long, 42½ feet in diameter, and had the two 110-h.p. motors salvaged from the debris of Z.4. A ladder ran up through one of the compartments to a platform on top. She was launched in May of 1909, and on her test flight was headed towards Bitterfeld, in the immediate direction of Berlin, where, by the way, the pilot had not the slightest intention of proceeding. However, rumour got about in the Imperial Palace that the airship was really coming to the capital, and not a little friction was caused between the Kaiser and the Count, because the former wasted several hours waiting to receive the airship in state. However, the engineer blissfully turned homeward from Bitterfeld, in ignorance of the semi-divine wrath, and safely regained Friedrichshafen, after a 700-mile trip. A wonderful repair job was effected near Stuttgart during the return journey, where the envelope was seriously damaged by a collision with a tree. This vessel was eventually wrecked in June, 1910, during manœuvres, after existing 13 months.

### Shortlived Zeppelin 6.

Z.6 (M.Z.III) was launched on August 27th, 1909, and made a reconciliatory journey to Berlin via Nuremberg and Leipzig, driven by two 150-h.p. Daimlers, and lifted by 533,000 feet of gas.

Friedrichshafen was left at 4.45 a.m., and the ship arrived at Nuremberg in the afternoon, where she anchored for the night. Restarting at 2.15 next morning, the crew fought their way against a strong wind towards Leipzig, taking 16½ hours to reach Bitterfeld, where another stop had to be made. At 7 a.m., on the 29th, she started in a thick fog, and Berlin was finally reached at 12.30 p.m., despite every kind of hindrance, and the Count had a demonstrative reception from the Kaiser.

Though built for the Army she did not pass her tests well, and was later turned over for passenger work, and was eventually burnt at Baden-Oos in September, 1910.

Encouraged by the success of the latest ship, a joint-stock company with a weird German name, with initials "D.E.L.A.G.," meaning German Aerial Transport Company,

was formed in December, 1909, with a capital of £150,000, its object being the construction of a line of large Zeppelins to ply with passengers between Baden-Baden, Mannheim, Munich, Leipzig, Cologne, Düsseldorf, Berlin, Dresden, Essen, and Frankfurt.

### The "Nine-Day Wonder," Zeppelin 7.

Z.7 was built for civilian passenger work, and was 485 feet by 46 feet, and had a capacity of 690,000 cubic feet. She had three engines, totalling 420 h.p., which drove her at 35 m.p.h. An elaborate cabin was built into the keel with seats for a score of passengers, and lunch was regularly served "en plein vol." The general appearance of this institution was that of a lightly constructed Pullman dining-saloon. On June 22nd, 1910, with full crew and a dozen passengers, she flew 300 miles in 9 hours down the Rhine Valley to Düsseldorf, where a shed had been constructed. On June 28th the "Deutschland," as she was christened, essayed another flight with a company of journalists, who may or may not have been Jonahs. At any rate, the vessel was caught out in a violent storm and practically wrecked. None of the journalists were killed. Z.7 was literally a nine-days' wonder!

### Zeppelins 8 to 13.

A new ship to replace her was at once put in hand, numbered Z.8, and named "Ersatz (or "replacement") Deutschland."

Z.9 was a military ship, "Ersatz M.Z.II," built in 1911.

Further passenger-ships were gradually built for the D.E.L.A.G. firm, named "Schwaben" (Z.10), "Viktoria Luise" (Z.11), "Hansa" (Z.13), and "Sachsen" (Z.17), and during the period between June, 1910, and November, 1913, they performed as follows:

"Deutschland," 7 trips of 20½ hours' duration, 1,035 kms. (625 miles) distance, carrying, with crew, 142 persons. (Wrecked June 28th, 1910.)

Z.6 (M.Z. III), 34 trips, 66 hours 11 mins.' duration, 3,132 kms. (1,880 miles), 726 passengers. (Burnt Sept., 1910.)

"Ersatz Deutschland" (numbered Z.8), 24 trips, 52 hours, 2,627 kms. (1,580 miles), 436 passengers. (Wrecked May, 1911.)

"Schwaben" (numbered Z.10), 230 trips, 499½ hours, 28,468 kms. (17,100 miles), 4,622 persons. (Burnt June, 1912.)

"Viktoria Luise" (Z.11), 372 trips, 820 hours 51 mins., 45,343 kms. (27,250 miles), 7,863 persons. (Taken over by Navy.)

Z.12 was built in 1912 as "Ersatz M.Z.III."

"Hansa" (Z.13), 268 trips, 577½ hours, 31,273 kms. (18,800 miles), 5,598 persons. (Taken over by Navy.)

"Sachsen" (Z.17), 170 trips, 337½ hours, 18,614 kms. (11,200 miles), 3,884 persons. (Taken over by Navy.)

Roughly computed, the above figures work out at 100 entire days spent in the air by the vessels, covering a distance of 130,492 kms. (about 80,000 miles), or about three times round the globe, and carrying 23,271 passengers without injury to any of them.

On one occasion the Queen of Sweden took a two-hour trip from Baden in the "Schwaben." Another enthusiastic passenger was the Hon. Lady Shelley, who has secured some wonderful photographs from the different airships, many of which have appeared in THE AEROPLANE.

During September, 1912, the "Hansa" flew from Friedrichshafen to Hamburg at an average speed of 51 miles an hour.

### Z.14. The First Naval Zeppelin.

The first Zeppelin specially built for the Imperial Navy appeared during October, 1912. She was a very large ship and one of the finest built up to that date. Considerable delay was caused by the ship being damaged against the side of the shed, and delivery did not take place for some time. She was numbered L.I, and her number in the Zeppelin shop series was Z.14. She was wrecked in September, 1913, as related hereafter.

Military airships were steadily built. Z.15, officially known as "Ersatz (Replacement) M.Z.I," was launched on January 19th, 1913. She had a brief career, for on March 19th in the same year she was caught out in a gale at Karlsruhe after a twenty-four-hour voyage, and totally wrecked. She, in her turn, was replaced by Z.19, which became "Ersatz M.Z.I."

M.Z. IV (Z.16) was completed during March, 1913, being

the sixteenth Zeppelin to be built at Friedrichshafen, and she did some good work at the different air stations.

Z.17 was the "Sachsen," whose career is noted above.

L. II (Z.18), the second naval Zeppelin, was completed about September 10th, 1913, and was delivered at Johannisthal on September 20th after a successful voyage from Friedrichshafen.

#### **Zeppelins 19 to 25.**

Z.19 was the second Ersatz M.Z. I, as already stated.

M.Z. V (Z.20) came out for the first time in July, 1913.

M.Z. VI (Z.21) was launched on November 22, 1913.

M.Z. VII (Z.22) was taken over on February 7th, 1914, having flown from Friedrichshafen to Potsdam. This vessel was 430 feet long, 45 feet diameter, and was designed to do 45 m.p.h. Actually, she reached 6,500 feet with full load and attained a speed of 50 m.p.h. This is about the type now being built.

M.Z. VIII (Z.23) was launched on February 21st, 1914, and flew to a height of 10,450 feet, a world's record, in less than an hour. During the same flight she remained aloft 5 hrs.

Naval L. III (Z.24) was launched on May 11th, 1914, and on May 22nd she left Friedrichshafen and flew northwards and made a devious voyage of 1,260 miles, during which Helgoland was visited. Finally Johannisthal was reached after 34 hours in the air. The ship attained an altitude of 10,000 feet during the journey.

The last vessel to be completed before the war was M.Z. IX (Z.25), which came out about July 20th, 1914.

#### **International Complications.**

On April 3rd, 1913, an extraordinary incident occurred which for a moment threatened to cause international friction. During the course of a test reconnaissance a military airship, M.Z. IV (Z.16), inadvertently came down at Lunéville in France. The French military authorities took temporary charge of the newest thing in Zeppelins, and during the period of "explanations" their aeronautical engineers made as searching an investigation of the internal economy of the machine as circumstances would permit, very much to the chagrin of all good Germans. However, things were smoothed over and the ship was allowed to depart in peace. This incident must have been very trying to the Germans, the more so as most elaborate photographs of the details of the working parts of the airship appeared shortly afterwards in all the French illustrated papers.

#### **The Fate of the Zeppelins.**

It will have been noted that this progress exacted a heavy toll of material loss, and time after time the work of months was squandered in as many minutes; in fact, by the time the sixteenth Zeppelin was completed eight of its predecessors had been totally wrecked by accident. Most of these losses have been mentioned already. The complete list is as follows:—

Z.2, wrecked on January 16th, 1907, in the Algau.

Z.4 was wrecked on August 4th, 1908, at Echterdingen.

Z.5 (M.Z. II) was wrecked on June 25th, 1910, at Weilburg.

Z.7 ("Deutschland"), on June 28th, 1910, in the Teutoburger Wald.

Z.6 was burnt in its hangar on September 14th, 1910, at Baden-Oos.

Z.8 ("Ersatz Deutschland") was fractured at the Düsseldorf hangar on May 26th, 1911, and was replaced by the Z.10 ("Schwaben"), which was destroyed by fire on June 28th, 1912, in Düsseldorf.

Z.15 (Ersatz M.Z. I) was wrecked at Karlsruhe on March 19th, 1913.

Happily, not a single life was lost in any of these mishaps, although workshop fatalities occurred from time to time.

#### **Two Catastrophes.**

But at last came two terrible catastrophes. Late in September, 1913, Naval Zeppelin L. I (Z.14), a fine new ship, which, on its acceptance flight in October, 1912, had travelled from Friedrichshafen to Johannisthal, via the Baltic, Kiel and Helgoland, a distance of 800 miles in 30 hours, carrying a crew of 21, left Helgoland under orders to join the German High Seas Fleet, and her commander tried to carry on through impossible weather. The airship was beaten down by the hail and the squalls, and was wrecked on the surface of the water, with a loss of fifteen lives.

Then, on October 17th, Naval Zeppelin L. II (Z.18), which

had only been delivered to the Government a month before, exploded in mid-air at Johannisthal, and her crew of twenty-five were killed. The cause of the accident was officially stated to have been the explosion of petrol vapour in one of the gondolas, but the popular belief in Germany is that the catastrophe was the result of an attempt to fire a light gun from the top of the envelope.

#### **The Most Modern Type.**

L. II may still be regarded as the most advanced type of Zeppelin, but those now being built differ from her in horse-power and dimensions, most of them being smaller. L. II, was 540 feet long, 46 feet in diameter, 1,000,000 cubic feet capacity, and of 720 h.p. Her speed was something like 45-50 m.p.h., and her theoretical radius of action at full speed was 600-700 miles. She was unique in having three gondolas and no keel. She weighed roughly 25 tons and displaced 30 tons, thus having 5 tons of spare lift to include crew, fuel, and all supplies, and her wireless equipment ranged 300 miles. She was the tenth Zeppelin to be totally wrecked.

#### **Zeppelins Available for War.**

At the outbreak of war the following ships were probably more or less fit for use: Z.9 (Ersatz M.Z. II), 1911; Z.11 ("Viktoria Luise"), 1911-12; Z.12 (M.Z. III), 1912; Z.13 ("Hansa"), 1912; Z.16 (M.Z. IV), 1913; Z.17 ("Sachsen"), 1913; Z.19 (Ersatz M.Z. I), 1913; Z.20 (M.Z. V), 1913; Z.21 (M.Z. VI), 1913; Z.22 (M.Z. VII), 1914; Z.23 (M.Z. VIII), 1914; Z.24 (L. III); Z.25 (M.Z. IX), 1914, making a baker's dozen in all.

#### **Later Deliveries and Losses.**

Z.'s 26, 27, and 31 were reported launched soon after the outbreak of war. The Navy possessed L. III and a Schütte-Lanz rigid airship, similar to a Zeppelin, but with a wooden frame. This latter was launched on February 28th, 1914, and was known as L. IV. The Navy also took over the "Viktoria Luise," "Hansa" and "Sachsen," which were borrowed to replace L. I and L. II. Z.'s 28, 29, and 30 were numbers assigned to the new Potsdam works.

It is definitely known that L. III and L. IV were wrecked over the Danish islands, and there is photographic evidence that one came to grief in France early in the campaign. One was destroyed by Flight-Comm. Marx, D.S.O., R.N., at Düsseldorf.

There are reasonable grounds for believing that three or four other Zeppelins have been accounted for on the different fronts besides the one lost in the Adriatic, and it is doubtful whether the united efforts of the Potsdam and Friedrichshafen works have done more than replace these losses, and do repairs.

#### **The New Numeration.**

In order to understand the meaning of newspaper reports of Zeppelin casualties it is well to point out that somewhere in 1913 the indicator letter of the German airships was altered. All Naval airships were labelled "L."—standing simply for "Luftschiff" or "airship"—as these included Zeppelins, Schütte-Lanzes, Parsevals, and anything else floatable and more or less controllable in the air. In this the German Navy followed the British precedent, as usual, for our Astra-Torres is "His Majesty's Airship III," and our Parseval is "H.M.A. IV."

The Military German airships are now known by their "trade" names, the Zeppelins being marked "Z," the Parsevals "P," and the Gross type "M" (for Militarisch).

The Zeppelin firm were thus obliged to mark their own workshop series number as "L.Z.," meaning Luftschiff Zeppelin. Consequently the ill-fated Zeppelin, which was blown up at Johannisthal, was L. II in the Naval Series and L.Z. 18 in the workshop series. The last ship to leave the works before war broke out was No. 25 in the workshop series, and the ninth Zeppelin owned by the Army, hence her correct numbering is really L.Z. 25, or Z IX.

For the sake of clearness the authors have adhered to the old numbering, Z. representing the workshop series, M.Z. the Military number, and L. the Naval number.

#### **Zeppelin Sheds.**

In the spring of 1914 there were sixteen sheds for Zeppelins in Germany, seven of them being single sheds and nine being built for two. The double sheds were at Friedrichshafen, Potsdam, Dresden, Johannisthal, Leipzig, Hamburg, Köln, Metz,



and Königsberg. The single sheds were at Frankfurt, Gotha, Posen, Liegnitz, Düsseldorf, Baden, and Mannheim. At that date other sheds were under construction at Allenstein, Trier, Braunschweig, Darmstadt, Stuttgart, München, Dresden, Friedrichshafen, Düsseldorf and Emden. Most of these are now completed.

#### **Zeppelins Under War Conditions.**

Up to the present, the Zeppelin has not figured brilliantly in the war, and there is no great prospect that it will do so. At present, the difficulty which seems insuperable is to make a rigid dirigible sufficiently strong to stand handling on the ground in rough weather. An airship 500 feet long and 40 feet high presents an enormous surface to a side wind, and if a squall strikes it on its way into the shed, its back will be broken against the entrance. Another problem is to reduce the gas leakage and the fuel consumption, thus making it possible to carry a greater load for a longer distance.

The Zeppelin labours under terrific handicaps. Her inferior speed leaves her at the mercy of the armed aeroplanes, and her enormous bulk makes her an easy target both for aviators' bombs and anti-aircraft guns. So long as she is not harassed she is quite useful for sea scouting in winds up to thirty miles an hour, as has been proved by the work the airships have done in guarding the approaches to Wilhelmshafen and Kiel.

Bomb-dropping expeditions have been safely achieved at night, but the difficulty of calculating leeway in the dark, the practical impossibility of locating specific buildings in unlighted districts, and the uncertain path of bombs dropped from a height have so far made these raids abortive. On each occasion the weight of explosives dropped has been surprisingly small, which seems to indicate either that the net useful lift is less than has been boasted, or else that it has been found dangerous to strain the airships by the excessive local buoyancy set up by the instantaneous ejection of great loads.

#### **Defensive Measures.**

Should a raid on London be attempted, measures have been taken for its defence which may not be described in detail here. The most obvious method of counter-attack is by fast, quick-climbing aeroplanes carrying incendiary bombs. The airships, if approached from above and behind, would be unable to use their machine-guns, owing to the intervention of their gas-chambers and control gear. The attacking pilots would slow down their machines as they passed over the envelope to a speed approaching that of the enemy aircraft, and so could

scarcely fail to secure a hit during their passage along the top of the 500-foot vessel. Bombs so constructed that they would cling to the fabric, and fitted with time fuses, should make it possible to fly in safety within a few feet of the airship, and so make the pilot's aim dead certain.

In spite of its unprecedented chapter of misfortune and the colossal expenditure of labour and money for seemingly trivial results, the Zeppelin still continues to exist. Its mere costliness has stunted its growth and delayed its development, and, compared with its rival the aeroplane, it is still in its infancy.

It is therefore purposeless and bigoted to dismiss the lighter-than-air craft as the chimera of faddists—its day may yet come; but what concerns us at the moment is that there is not the slightest prospect of the newest Zeppelin excelling its predecessors in any important degree for a year or two. For the rest, the future will draw back the veil.

#### **The Rubaiyat of the Special Correspondent.**

(With apologies to Edward Fitzgerald and Omar Khayyám.)

Awake! for Morning's Mail has come to light,  
And in it You describe a Wondrous Flight

Of ninety Zepp'lins all for London bound.  
Pray, did you think that we should take Affright?

Dreaming, when Dawn's Left Hand was in the Sky,  
You thought You saw those Airships flying by—

And so to Grub Street You at once did Wire.  
And Boys with Posters sallied forth to Cry.

Ah! my Beloved, fill the Cup that's Clear,  
For You have made an Error, much I fear,

And told us of those Creatures of the Night  
Which were to London quickly drawing Near.

Come, fill the Cup—I must confide my Tale;  
You look so worried and Your Face is Pale!

The Chief has wired that You must quickly Quit?  
But sure You knew that Airship Yarn was Stale!

You say You watched them Fly and saw their Hulls  
Just at the Time when Aries sends the Lulls?

Your eyes are Psychic, sure, or else You drink:  
Those ninety warlike "Zepps"—were simply Gulls!

"ORNIS."



THREE FAMOUS PILOTS.—Sergeant-Aviateur Verrier, M. Henri Farman and Adjudant-Aviateur Noel—at Buc.



## Aero-motors: In Kind and Construction.—(Continued)

BY GEOFFREY de HOLDEN-STONE.

One of the charms of engineering, as of chafing-dish cookery, is the sempiternal existence of the "another way." Otherwise there would be no Escoffiers, no Lanchesters, no—but you can readily fill in that other name. There is always a "best way" for everything, from the creation of a *Sole Colbert* to the assembly or even the design of an aeromotor or an apple-pie. That way is, of course, your own. But once in a way, there is not only one generally accepted plan, but no other is possible. They will tell you anywhere in France that there is only one practicable way of putting a Maxim gun together. I tell you that a beef-steak pudding must be made in a cloth with a bottom-crust. Likewise that you can only assemble the Salmson motor in a similar fashion; the bottom-crust being the back-half of the crank-chamber. Now then...

Never begin, let alone proceed, in the make-shift fashion of the Indian cook who uses a flat stone for every kind of culinary operation; which fundamental kitchen-fact has made Indians a race of artist craftsmen who cannot file a true flat or scrape a bearing. Begin then, French fashion, with a properly built heptagonal support—like one of those Brum-Moorish coffee-tables, inverted—and then sort all your metallic ingredients about you in rows in order as they will be wanted, on an adjacent table, or the *tôle*, which is the French all-comprising word for everything from a tarpaulin to a table-cloth.

Having got all these in due array, set this back-half of the crank-chamber into the support, and drop the rear ball-race within the lower fixed gear-ring I; or B1 in previous figures.

### The Innards.

Thus your bottom-crust, and, so to say, support. Now you must assort the to-be-contained meat in the shape of crank-shaft, pin-carrier, rods and pistons completely assembled as in Fig. 1.

Begin this assembly with the carrier-drum which—having inserted its rear ball race—set on a stout peg whereon it can be conveniently rotated. You will find it more convenient to attach the pistons to their rods next, and secure the gudgeons perfectly, before doing anything else; because you can move them about and get the strongest light into the cavity of the piston-trunks, and so make absolutely sure that the set-screws are dead home and the pistons rocking with perfect freedom on their duly lubricated bearings.

Then, having placed a clean pad for each piston, attach the rods one by one, by simple insertion and dropping in their respective pins, all likewise lubricated. In fact all these small parts should stand in a deep oil tray, ready, like surgical instruments in a dish of antiseptic.

Finally, drop in the forward ball-race and the assembly will be so far complete.

Next, lift the whole clear of the peg, and over on its other side; and then insert from beneath the coned or male end of the crank-shaft. The carrier-wheel will now be uppermost;

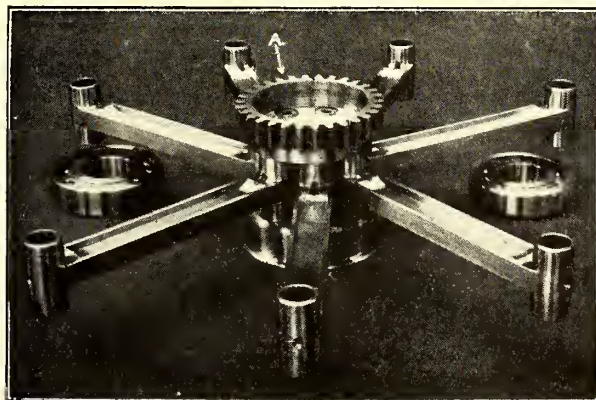


Fig. 1. Assembly of Connecting Rods.

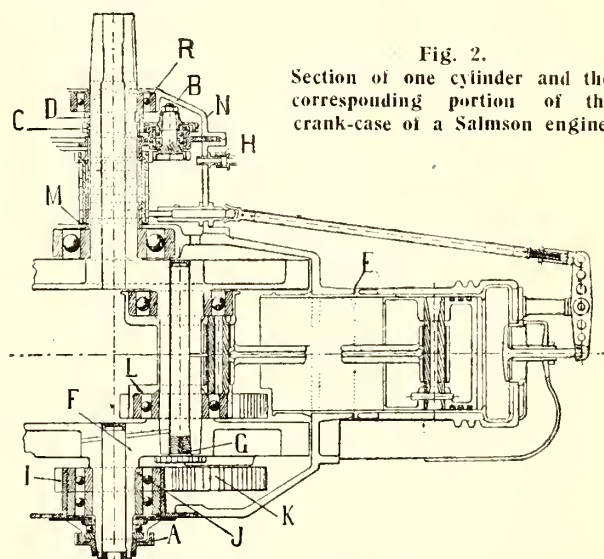


Fig. 2.  
Section of one cylinder and the corresponding portion of the crank-case of a Salmson engine.

so having previously freed the satellites on their spindle, set the after or female part of the crank-shaft in place so that the satellite A1 (Fig. IV, p. 413, Apr. 28) meshes with the carrier gear wheel.

Then, having seen that the crank-weights are in the right off-set relation, the locking-nut G (Fig. 2) can be set home, and its locking-screw and the two little bolts duly set in place and home as far as they will go. With the distance-ring J—in the case of the 90-h.p. seven-cylinder model—slipped over the rear or uppermost end of the crank-shaft, the assembly is completed a stage further, and the main internal parts are ready to be dropped in.

### Final Assembly.

The whole mass is now lifted into the reverse position, and the rear end of the crank-shaft lowered into the ball-race in the crank-chamber; care being taken that the aforesaid distance-ring—should one exist—has also been duly placed.

At the same time, take special care—for this purpose a small piece of wood should be laid against the fixed gear-wheel I—that the lower satellite K (B in Fig. IV, p. 413) does not mesh with it for the time being, until the connecting-rods have been set in their correct clock-wise thrust lead.

The cylinders may now be slipped over the pistons and brought into their permanent recesses; the locking rings, of course, having been previously slipped over their trunks.

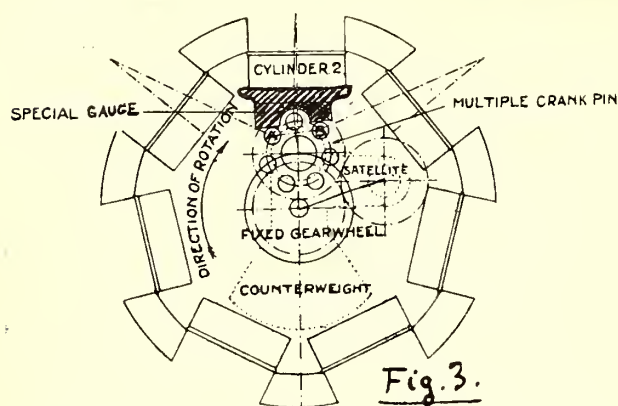
### Connecting Rod Setting.

Now comes the critical—yet by no means difficult—operation of connecting rod setting. For this purpose, take—or make—a small piece of flat steel (as shown in Fig. 3 by the shaded lines under cylinder 2) with its edges straight, but out of parallel with each other by about 6 deg.: and so that one edge shall be correspondingly out of square with the ends. Centrally on this edge, cut a half-round nick big enough to fit over the grip-end of any connecting-rod so completely that the edge can touch the next adjacent pins, on either side of that rod.

Then take any cylinder and set the crank-shaft exactly in line with its central axis. The satellite K, not being in mesh of course, enables the carrier to be oscillated either way on the crank-pin, so as to vary the angle of connecting-rod thrust with the cylinder axis.

Now, if the little steel gauge be set in place on that particular rod-end, the crank-pin carrier should be turned anticlockwise so that the lower edge—the one touching the adjacent pins—makes an angle of 5 deg. or so with the edge of the cylinder that belongs to the rod, while its upper edge comes exactly parallel therewith.





This, I may say at once, is not the orthodox way: which is to use a plain parallel-edged straight-edge, nicked accordingly, and—guess your angle with the cylinder-edge by rule of eye and thumb, with no possible means of being mathematically sure of the angle you desire to find. The obviously easier way is to cut the gauge with its edges to the mathematically exact relative angle in the workshop; where at the same time it may be widened, and the upper edge lengthened, as shown in Fig. 3, so far that it can butt against the cylinder-end.

Nothing is easier, too—since motors vary in their likes and dislikes of lead-adjustment—than to cut two or three such gauges with varying angles, lessened with one or two light file strokes from the narrower to the wider end, and keep the chosen gauge for that particular motor. In any case you could be absolutely sure of your setting with the upper edge butting the cylinder end, if you were assembling the motor under a hedge somewhere in France or Eastshire. But it isn't the book way, which bids you guess about this constitutional adjustment.

Anyway, having duly found the adjustment, remove the little piece of wood, and let the cylinders and crank-shaft drop the last inch, so that the planetary K may mesh finally with the fixed gear-ring I—the aforesaid B<sub>1</sub> and B—and key up the planetaries as they thus automatically find themselves. However, as the final touch before leaving this adjustment see that the connecting-rods, when in the position of extreme obliquity are “*désaxés*” 4 mm. nearer the left side of the cylinder than the right one, as you look down into the motor from above, i.e., from the front side.

#### Lubricate.

*Nunc est bibendum*; unless you fear to decrease your output. . . . Anyway, give the internals a good drink of the chosen lubricant, having first wiped every part you can reach with a linen or muslin rag with no fluff about it. Next tighten up each cylinder with its locking-ring; and having put the forward main ball-race on the crank-shaft, place the front or upper half of the crank-chamber in place and bolt up.

Then replace the rubber water connections between the cylinders and having first set on the small brass distance-ring M, that limits the lateral displacement of the cam-sleeve, you may re-install the distribution-gear as a whole, just in the reverse order, detail by detail, as you took it down; not forgetting a liberal dose of oil after wiping dry, before you close up.

#### Distributor Adjustment.

The distribution gear has now to be adjusted. So take any cylinder and turn the crank-shaft so as to bring the piston to the upper dead-point, i.e., the extreme instroke. In this position put the two tappets that belong, and turn the intermediate gear N of the distributor—that is the upper front one—counter-clockwise.

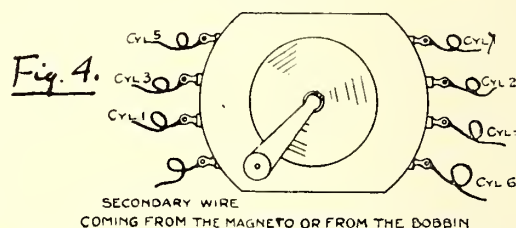
Now, remembering that the exhaust closes and the induction opens just at the aforesaid dead-point, you need only turn this gear N until the inlet-valve tappet-rod is just about to lift. For choice, make the lift a shade early; or rather the exhaust-lift correspondingly late.

Then push on the cam-sleeve so that an inlet-cam will just bear on the foot of the jumping-piece of the corresponding tappet under manipulation. This action will slide the cam-sleeve gear into mesh with the gear behind N; and the keys falling into their corresponding slots, can be set home. Having thus made the distribution adjustment for one cylinder, you will have made it for all the others. The actual valve adjustment is done later; so the distribution cover and its ball-race may now be replaced.

#### Another Somersault.

In all but externals, the motor is now assembled, so to receive these it must be lifted again and set face downwards. The back-plate of the ignition distributor is now set on over its ball-race, as shown in the previous line-diagram, and the small gear A set on the taper of the crank-shaft end with its locking-nut. Here, again, adjustment comes later—last of all in fact, except the actual connection of petrol and oil piping—so meanwhile the induction-hoop and water-pump should be replaced.

WIRING DISTRIBUTION ARRANGEMENT  
FOR A MOTOR TYPE M7



Then comes the magneto and its adjustment: wherein it will be noticed that the secondary current from the magneto is led in at the lower left-hand corner of the distributor-plate (see Fig. 4), and that the carbon carrying the current rotates clockwise at half motor-speed. As we already know, the firing order is: 1, 3, 5, 7, 2, 4, 6 and so forth, as previously described; the terminals being set in the distributor in the same order.

(To be continued.)

#### For the Maimed in War.

Many of those whose privilege it has been to fight in one or other of the King's Services have been invalided home minus a leg, and it is to be feared that this fate awaits many others. After the periods of recovery from shock, and of convalescence, their attention will naturally be turned to the problem of procuring an artificial leg, which will replace, in some measure at any rate, the missing member. This task is no easy one because it is essential that an artificial limb must be considerably lighter than the real article, and it is difficult to combine this desideratum with utility and strength.

The majority of the readers of THE AEROPLANE will remember the serious accident to young M. Marcel Desoutter at Hendon a couple of years ago, after which he had to suffer amputation above the knee of his left leg. After trying several artificial limbs constructed by so-called surgical appliance manufacturers, and finding them all too heavy, uncomfortable and insanitary, M. Desoutter determined to try and construct one for himself.

Aided by his brother—they are both engineers—he soon constructed an artificial leg of metal tube, which is by far the best thing of its kind yet produced. The result is that he can now walk without a stick, fly, and drive a car as well as a sound man, and no one who did not know of his accident would think that he was afflicted with anything worse than a slight limp.

In consequence of his success, which he attributes to his being the only artificial leg-maker who has to use his own product, he and his brother are now regularly established in business at 12, New Burlington Street, W., and any readers whose friends have suffered amputation will be doing those friends a great service by letting them know of the Desoutter Brothers' address,

**THE WORK OF THE HENDON SCHOOLS.**

BY D. W. THORBURN.

**The L. and P. School.**

In July last, immediately before the fateful declaration of war was made, a new school was started at Hendon under the title of the London and Provincial Aviation Company. Mr. W. T. Warren, who is responsible for the management, is well known to readers of *THE AEROPLANE*, having been identified with aviation from the very early days. He learned to fly on a 25-h.p. Blériot and a 28-h.p. Deperdussin, and later on joined the Caudron Company, first as chief mechanic and then as instructor. He became famous as the inventor of the Warren Safety Helmet, the first British safety helmet made, which has been officially adopted by the Admiralty and War Office.

In addition to Mr. Warren himself, the instructors are Messrs. M. G. Smiles, W. D. Smiles, and J. H. Moore. The school equipment at present consists of machines of the Caudron type, constructed entirely on the premises at Hendon. There are two 35-h.p. Anzani, one 45 two-seater, and a 35-40 intended entirely for brevet work.

A special feature of the school is the ample supply of spare parts always in stock, together with a spare engine for each machine. Everything being standardised, there is a great saving of time on those occasions when the over-confidence of some enthusiastic beginner, or the unexpectedness of some gust of wind, has resulted in a little structural damage.

Not so long ago two of their machines met with misfortune in one morning, but, thanks to the excellent organisation of the works, both were out again next morning as fit as ever. The advantages of a school where delays are reduced to a minimum in this manner are obvious. A Winchester boy came along for a course of tuition during his Easter vacation, and took his certificate and went back to school on the last day—an enviable holiday for any public school boy, and one which will doubtless be copied by many in the near future.

Seven tickets have been taken by the L. and P. School in the last five weeks, and as it is stipulated that every pupil must undertake to offer his services to one or other of the Air Services, one need not emphasise the value of the work done by this enterprising company. A visitor to Hendon, on enquiring why the school was called "the L. and P.," was informed that this indicated that the teaching was Lucid and Practical. One may, at any rate, hope that its career may be long and prosperous.

**The Ruffy-Baumann School.**

The youngest flying school at Hendon is that founded by Messrs. Ruffy and Baumann last October. Anyone, however, who has visited the headquarters will readily admit that if it is lacking in age it is not lacking in efficiency, for the outfit is of the very best.

To begin with, Mr. E. Baumann has probably had as much experience in teaching as any living pilot, for since he first became an instructor he has been responsible for over a hundred pupils. When he was on the staff of the Beatty School he had

among other pupils Mr. F. Ruffy, and these two pilots are now in control of an up-to-date organisation, assisted by Messrs. Herbert James, Howard James, Gino Virgilio, and Clarence Winchester, the latter being already well known by reason of his association with the Pashleys at Brighton.

Mr. Baumann, as an instructor, has really a remarkable list of pupils to his credit, among them being Capt. Conran, D.S.O. (Flight-Comm. R.F.C.), Captain L. A. Strange (Flight-Comm. R.F.C., and awarded the Military Cross), Capt. N. W. Noel (Flight-Comm. R.F.C., mentioned in despatches), Capts. Chamier, Jennings, and Billing, Lieuts. Adams, Ambler, Clark, Holbrow, Stodart, Beaver, F. W. Goodden, and H. de Havilland, on the Military side, and on the Naval side Comm. Osborne, R.N., and Lieut. Hicks, R.N. Among well-known civilian aviators taught by him are Messrs. Ruffy, Rowland Ding, Roche-Kelly, Prosser, Virgilio, J. H. James, and H. H. James. Quite a goodly list.

The equipment consists of four Caudrons, two with 60-h.p. Gnoms, fitted with dual control, one 50-h.p. Gnome, and a 45-h.p. Anzani. In addition to these, two more 50 Gnome Caudrons are being built at the works in Baker Street.

It will be observed that the firm is particularly well off for Gnoms. In fact, the two sixties are the only ones of their kind in England. Mr. Ruffy was recently in France and was able to make some very advantageous purchases, with the aid of the French Government, one of the engines being brought back in a handsome basket as "personal luggage"!

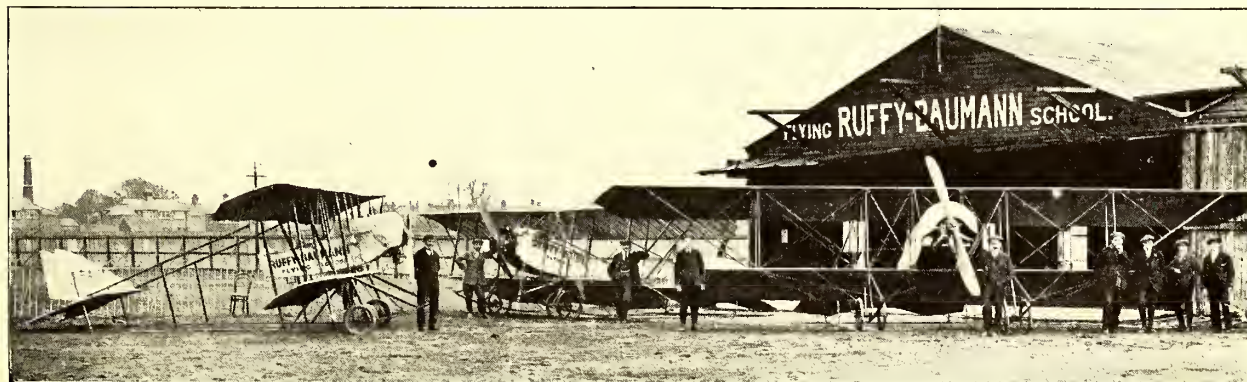
The dual control method of teaching is the one adopted here. Pupils are first taken up on the 60-h.p. two-seater machine, and after a few lessons are allowed to practise alone on the 45 h.p., the brevet flights being made on the 50-h.p. Caudron. No other school has a similar collection of machines of such comparatively high power, and it is interesting to notice the success which is attending the use of fast Caudrons of high climbing speed, yet capable of landing at somewhere about fifteen miles per hour.

This week there are ten pupils ready to take tickets as soon as the wind moderates, so the Ruffy-Baumann School may well claim to be fulfilling the requirements of the countless personal appeals to patriotism which meet one's eye in the Press and on the walls of London's alien-owned restaurants and elsewhere. May its pupils be numerous and do good work for the country!

**The J. L. Hall School.**

In the summer of 1912 there was no keener pupil at the Blériot school at Hendon than Mr. J. Lawrence Hall, of Sheffield, and in September of that year he received his certificate. How many miles he has flown since that date it would be instructive to learn, for he has given exhibition flights in many parts of the country. The school which he started at Hendon in 1912 has provided Great Britain with many competent pilots, and a recent visit to the premises revealed every indication that the near future will add considerably to the list.

Regarding the capabilities of the founder of the school little need be said, for Mr. Hall is well known to a wide circle of the public, and the success of his method of teaching was



Some of the machines of the Ruffy-Baumann School, including the new 60-h.p. Gnome-engined Caudrons.

Photograph by F. N. Birkett, Shepherd's Bush, W.



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demonstrated long ago. His manager is Mr. Bernard Francis, who was responsible to a large extent for the organising of another school, and under his control the Hall School runs smoothly and well. The second instructor is Mr. H. S. Stevens.

The machines comprise a 35-h.p. Anzani-Blériot, two single-seater Caudrons, with similar motive power, a 45-h.p. Anzani two-seater Caudron, and two more Caudrons are almost complete, one being a fuselage type, with several interesting features, and a 50-h.p. Gnome.

When war broke out Mr. Hall was giving exhibitions of looping at Shoreham on an Avro, and this machine was taken over by the Government.

Pupils can be assured of careful and thorough training on well-maintained machines at this School, which is all-British in constitution, and may be expected in due course to expand in that manner which is characteristic of British commercial undertakings. One regrets to hear that Mr. Hall has been on the sick list with an attack of tonsillitis, but hopes to see him back again very shortly, engaged in the work for which he has so much aptitude and evident fondness.

### The Importance of the Schools.

In the above brief sketches of the Hendon Flying Schools one has some indication of the size and importance of the work which is being done at the aerodrome on behalf of the nation. Those who are training new recruits for service in the air are undertaking something of vital importance, which entitles them to a share of credit for patriotic service. If every new recruit for the Army brings peace a little nearer, how much more true may it be of every new aviator whose services are placed at the disposal of his country?

The school mechanic, who devotes part of his dinner-hour to the replacing of some damaged part of a machine, can feel that he is "doing his bit" towards the great task before us all. The schools are certainly doing very good work, and are showing the right spirit, so one wishes them the best of fortune.

### A Difference.

The "Cambridge Review" says:—The following extract from a hymnal for the use of the Kulturkämpfer is put at our disposal by a veracious friend, who read it the other day in a copy imported by way of Switzerland:—

"Der Du über Cherubinen,  
Seraphinen, Zeppelinen,  
In dem höchsten Himmel thronst. . ."

Translated roughly, this reads:—

"There art thou over Cherubim,  
Seraphim, Zeppelin,  
Enthroned in the highest Heaven.

Anyhow, from the Anti-Aircraft Gunner's point of view, the Zeppelin presents a better mark than the traditional Cherub of the old Masters—"Raphael and Tuck and those old chaps"—in that the Zeppelin has a bottom surface at which to aim.

### The Lament of the Old Racer.

[Lines conveyed to an enthusiast by one of the aged Paris-Madrid racing cars, discovered in an outhouse in the country.]  
They've left me here in silence since I can't remember when,

"Till every tyre on my wheels is flat.

I wonder what they'd think of me, if they had known me then,  
I fairly wiped all records off the mat.

From Paris to Vienna, and to old Valladolid,

I showed the pace to any railway train.

I was foremost in the battle from Paris to Madrid—

There'll never be a race like that again.

I've tried to reach high heaven and I've wallowed in the mud,

It's not for me to say all I have done.

I've scaled the sides of mountains and I've dashed my way  
Through flood,

I've torn the solid earth up, just for fun.

Now all the "nuts" with cycle-cars who think themselves so  
fast,

Deride me if I ever chance to roam.

"Gadzooks! What Ho! Old iron! You're a spirit of the past.

"Can't you get some one to put you in a home?"

You ask me what's the matter with my big coal-scuttle lamp?

Why it's cocked at such an angle to the sky?

You might as well ask why it is I'm rotting in the damp;

But, all the same, I'll tell the reason why.

I'm watching for those aeroplanes what's swanking over-head.

I feel as if I'd like to down and die.

It makes me feel that home-sick that my cased steel turns  
to lead.

I want to start my engine up and fly.

If I was like some blighters that can do such lots of things,

I wouldn't stay another minute here.

I'd rot my tonneau body off and grow a pair of wings;

And fill my blooming petrol tank and clear.

It makes my side brakes rattle, my ignition have a fit,

To hear those big Gnome engines up above.

If I could only get some mug to patch me up a bit,

I'd fly out in the sunshine like a dove.

With my engine roaring happily from gay Paree à Londres

(It's got some "judy" in it even yet),

I'd stagger old humanity, I'd fly the Herring Pond,

I'd let the beggars see how I could get.

Then smash my differential, let my old chains sag and grind,

My strength's no longer as the strength of ten,

But if you search creation through, I don't suppose you'll find

Much better stuff than I was made of then.

### Oleo Plugs.

A representative of THE AEROPLANE had a chat recently with Messrs. Ripault and Co., and learned that business in these useful articles was flourishing. While the works are not wholly employed on Government work, three-quarters of the plugs are now being made for the Allies. Some large contracts have just been received, but all private requirements are still being fulfilled.

If experience counts for anything this firm should do well,

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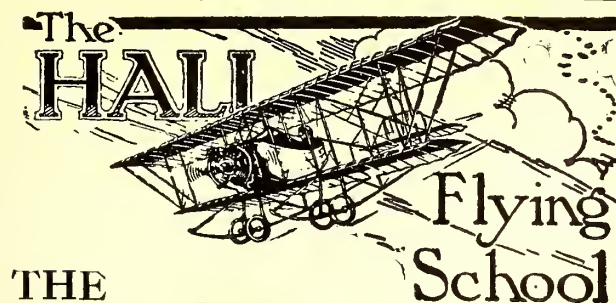


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for they were the first firm in the world to make plugs for aviation purposes. Blériot used one when he crossed the Channel, Paulhan flew from London to Manchester with the aid of an Oleo, and they have been in general use, with satisfactory results, ever since.

It is worth while recording that they are now fitted as standard plugs to the Gnome, Anzani, Salmson, LeRhône, and Clerget engines, which is evidence of searching tests under all sorts of conditions by all sorts of experts.

### The Week-end at Hendon.

It was extremely tantalising for the visitors to the Aerodrome on Saturday—and probably not less so for the directors and officials of that popular resort—that while the sunshine was delightful and the air fresh, the wind was too high to admit of flying to any great extent. One or two Maurice Farman were out early after lunch, one of them going off at a good height to Farnborough in charge of Mr. Birchenough. Mr. Osipenko came out on a Grahame-White biplane, and towards dusk Mr. Beatty flew well in a nasty wind on a Wright biplane.

On Sunday there was again a good attendance, attracted by the promise of unlimited fresh air, but unfortunately there was too much of it, for the wind-gauge was busy drawing long ranges of mountain peaks which, to the initiated, represented from 20 to 40 miles an hour. A plucky attempt at a flight was made by Mr. Osipenko, but he very soon found it discreet to make a safe landing and go and have tea, and the visitors, who were considerably calmer than the wind, also had tea and went home. It is to be hoped that next week-end will be more encouraging.

### School and Weather Reports.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
Hendon ...	Windy	Windy	Good	Fair	Fine	Windy	Windy
East Coast ...	Fine	Fine	Fine	Fine	Fine	Fine	Fine
Lake District	Windy	Windy	Fine	Fine	Fine	Windy	Windy

**Hendon.**—AT THE BEATTY SCHOOL OF FLYING, LTD.: INSTR.: Messrs. G. W. Beatty, W. Roche-Kelly, C. R. Prodder, and Bransby Williams. Pupils with instr. on machine: Messrs. Alcock (42 mins.), Bond (7), Bright (10), Broughton (10), Chalmers (40), Chapelle (35), Crossman (5), Crowe (33), de Meza (18), FitzHerbert (7), Fraser (35), Hay (58), Hodgson (16), Johnston (5), Leong (15), March (20), Morgan (20), Robb (5), Roche (85), Rutherford (5), Smith (5), Summers (40), Tomlinson (41), Wainwright (10), Whincup (5), Wiles (5).

Mr. Y. K. Leong took a very satisfactory ticket on Wednesday.

The machines in use were Beatty-Wright dual-control and single-scoters and three Caudron tractor biplanes.

Exhibition flights were given on Thursday and Sunday by Messrs. Beatty and Roche-Kelly.

AT THE LONDON AND PROVINCIAL AVIATION CO.'S SCHOOL.—INSTR.: Messrs. W. T. Warren, M. G. Smiles, and J. H. Moore. Pupils with instr.: Messrs. Deschamps, Irwing, Allen and Turner. Strts. or rolls.: Messrs. L. Deschamps, P. G. Allen, J. A. Turner, G. Irwing. S's or circs. alone: Mr. W. D. Smiles. Mr. W. D. Smiles took a good ticket on Wednesday morning. Machines: 3 L. and P. biplanes. Extra practice by Messrs. McCauley and Hubbard.

AT THE HALL FLYING SCHOOL.—IN spite of the bad weather experienced during the first part of the week a great deal of work was got through. Wednesday: Mr. Mitchell (16 mins.) on No. 1 machine, Messrs. Hatchman (15), Snowden (10), Cook (30), Minot (15), all doing straights on No. 3 machine, and Mr. Hill (22) on No. 1 making a number of very good straights. Lieut. Jowett (20), Messrs. Millbourne (15), Hamer (25), Booker (20). Lieut. Blythe for about 20 mins. on No. 1 flying half circuits. Thursday: Lieut. Blythe (10), Messrs. Hill (8), Mason (12), Cini (12), Minot (10), Snowden (9), Hamer (12), Hatchman (15), and Furlong (14), all putting in some very good work during the morning. Thursday afternoon: Lieut. Jowett (10), Messrs. Millbourne (18), Hill (8); doing straight



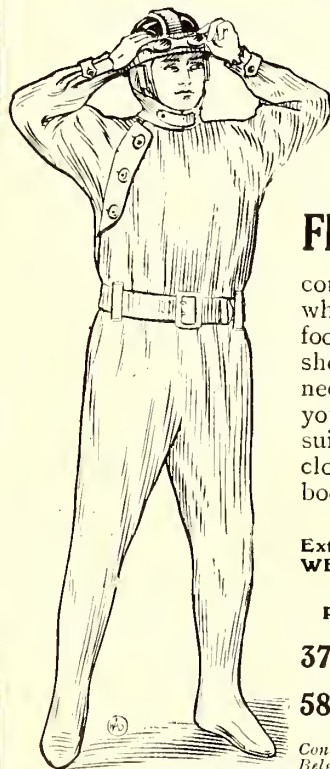
flights, Cook (8), Minot (5), Mason (6), Hamer (7), Hatchman (12), Furlong (5), Mitchell (4), Snowden (4) and Cini (5). On Friday: Lieut. Blythe 10 good straight flights, Messrs. Bayley (15), Furlong (6), Hill 4 straight flights, Mason (10), Millbourne (20), Cook 4 straight flights and Mitchell 4 good flights. Instructors: Mr. J. L. Hall and Mr. H. F. Stevens. Machines: Nos. 1, 2 and 3 Hall tractor biplanes.

AT THE RUFFY-BAUMANN SCHOOL.—Instructors: Messrs. Edouard Baumann, G. Virgilio and James Brothers. Strts. or rolling: Messrs. Roobaert (22 min.), Jackson (27), Sykes (27), Cole (14), England (12), Blandy (12), King (6). Thurs.: Jackson (16), King (6), Cole (6), 60-h.p. Caudron out. 8's or cires., Wed., Roobaert (22 mins.); Thurs. Roobaert at good altitude, ready for ticket (6); Cole and Jackson also nearly ready for ticket. Friday: All pupils out. Certificate taken by Mr. Reginald Kenworthy on Wed., May 5th, in good style. Time 20 mins. Machines: 45-h.p. Anzani Caudron, 60-h.p. Gnome Caudron and 50-h.p. Caudron monoplanes. M. Edouard Baumann busy testing new 60-h.p. Caudron. Consignment of Gnome engines unpacked. Another new Caudron is being constructed.

AT THE GRAHAME-WHITE SCHOOL.—Instructors: Messrs. Manton, Russell and Winter. Pupils with instr.: Prob. Flt. Sub-Lieuts. Burling, Bingham, de Roeper, De Ville, Greer, Pennington, Smylie and Wain. Strts. or rolling alone: Prob. Flt. Sub-Lieuts. Coleman, Greer and Burling. Cires.: Prob. Flt. Sub-Lieuts. Coleman, Bone, Greer and Hood. Certificates taken by Prob. Flt. Sub-Lieuts. Bone and Kerby. Machines: Grahame-White biplanes.

Windermere.—AT THE N.A.C. SEAPLANE SCHOOL.—Instructors: Messrs. W. Rowland Ding, C. L. Pashley and J. Lankester Parker. Pupils with instr.: Messrs. C. A. Barber (7), A. Johnson (14), F. H. M. Macintyre (36), H. P. Reid (9), H. Robinson (38), J. F. Ridgway (21), G. L. Raitlon (23) and S. J. Sibley (15). 8's and cires.: A. Buck (70). Machines: Avro biplane, 50-h.p. Gnome, dual control, N.A.C. propeller monoplane, 80-h.p. Gnome. Messrs. W. R. Ding, C. L. Pashley and J. L. Parker out testing.

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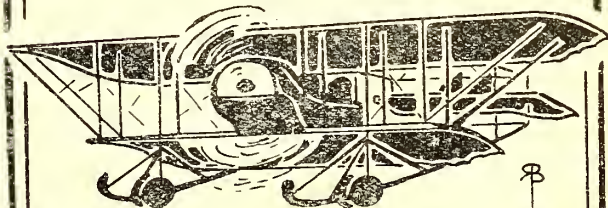
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"THE AEROPLANE," May 19, 1915.

# THE AEROPLANE

1D  
WEEKLY

Edited by C. G. GREY. ("Aero-Amateur")

VOL. VIII. [REGISTERED AT THE G.P.O.  
AS A NEWSPAPER.] WEDNESDAY, MAY 19, 1915.

No. 20

## R. N. A. S.



Photographs by F. N. Birkett, 97, Percy Road, Shepherd's Bush, W.

OFFICERS OF THE ROYAL NAVAL AIR SERVICE, FOR SERVICE WITH KITE BALLOONS ABROAD.—  
Back Row, Left to Right:—Flight Sub-Lieut. W. H. E. Campbell, R.N.A.S.; Flight Sub-Lieut. E. Middleton, R.N.A.S.;  
Lieut. S. A. Currin, Royal Marines and R.N.A.S.; Sub-Lieut. Ogilvie Davies, R.N.V.R.; Sub-Lieut. the Hon. G.  
Rollo, R.N.V.R. Front Row, Left to Right:—Flight Sub-Lieut. W. K. F. G. Warneford, R.N.A.S.; Major the Hon.  
Claude M. P. Brabazon, Irish Guards and R.F.C. (Squadron Com. R.N.A.S.), commanding Section; Lieut.-Col. E. M.  
Maitland, Essex Regt. and R.F.C. (Wing Commander, R.N.A.S.), commanding Wing; Captain W. F. MacNeece, 1st  
Queen's Own Royal West Kent Regt. and R.N.A.S.; Sub-Lieut the Hon. A. S. Byng, R.N.A.S.





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# THE AEROPLANE

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Accounts, and all correspondence relating thereto, should be sent to the Registered Offices of "The Aeroplane and General Publishing Co., Ltd.," Rolls House, Breams Buildings, E.C.

The Editor cannot undertake to return unsolicited manuscripts, whether accompanied by stamps or not, though every endeavour will be made to do so.

"The Aeroplane" is not connected with any other business at the same address, whether associated with Aeronautics or not.

Subscription Rate, post free: Home, 3 months, 1/8; 6 months, 3/3; 12 months, 6/6. Abroad, 3 months 2/2; 6 months, 4/4; 12 months, 8/8

## RETALIATION.

On May 13th the Foreign Office issued for publication certain interesting and somewhat amusing correspondence between the American Embassy and our Foreign Office. The first letter reads thus:—

1.—THE UNITED STATES EMBASSY TO SIR E. GREY.  
Embassy of the United States of America,  
London, May 4th, 1915.

The American Ambassador presents his compliments to his Majesty's Secretary of State for Foreign Affairs, and has the honour to acquaint Sir Edward Grey with the following telegram which he has to-day received from the Secretary of State in Washington:—

"Cablegram dated May 2nd from Morgenthau, Constantinople, states:—

"Minister of War to-day told me that the Fleet and aeroplanes of the Allies are bombarding and killing non-combatants at Gallipoli and other unfortified places on that Peninsula. He has therefore decided to send to those places French and British subjects from Constantinople, exposing them to the same danger; but he will delay taking this step until May 6th, so as to give time for the receipt of an assurance that orders to discontinue such bombardment will be given."

To this the Foreign Office replied on May 7th. Why it should take three days to draft a reply is not explained. After some preliminary palaver, one finds that the gist of the reply reads thus:—

In reply, I have the honour to request that Mr. Morgenthau may be so good as to inform the Ottoman Government that if British or French non-combatants are transported to those places which, owing to the presence of the Ottoman Army, fall within the zone of present military operations, his Majesty's Government will hold Enver Pasha, his Highness Said Halim Pasha, the members of the present Ottoman Ministry, as well as the military authorities commanding the Turkish troops, personally responsible for the life of any British subject or French citizen so transported, and for any hurt, damage, or wounds which such nationals may receive.

The American Ambassador replied with characteristic American promptitude on May 8th, stating that the contents of the Foreign Office Note had been communicated on the previous afternoon by cable both to the American Ambassador at Constantinople and to the Department of State in Washington; also that he had just received from the American Ambassador at Constantinople a telegram dated May 4th, in which he stated that the Turks had, at his urgent request, consented only to send men between twenty and forty years of age, to limit the number to fifty, and only to send the youngest. Further, these men were to be allowed to remain on board a steamer until the American Embassy heard from London and Paris.

On May 6th a further message from Constantinople said that twenty-six British and twenty-four French subjects had been shipped on a transport bound for Gallipoli. Among them were only two British-born subjects, William Wickram and Harry Hoar, and two

French-born subjects, Marcel Arjol and Paul Bacognano.

Two American newspaper-men were allowed to accompany the boat, either to observe the agony of the victims or to see fair play—according to taste.

Then, on May 15th, it was announced that, owing to the persuasion of Mr. Morgenthau, who, despite his curiously German name, appears to be quite a kind-hearted person, the whole outfit was brought back to Constantinople.

### The Bomb-Buffer.

The whole incident shows the enemy's intensely practical and thorough method of waging war. Months and months ago it was suggested in this paper that the best way to protect important buildings in London against attacks by aircraft was to turn the top floors into barracks for German prisoners of high rank. One can imagine the pride of Admiral von Tirpitz, for example, on hearing, via the American Embassy, that his son had received an appointment at the British Admiralty as "Bomb-Buffer to the Air Department."

Of course, the whole scheme of using prisoners as involuntary members of the Anti-Aircraft Corps is on a par with using civilian non-combatants as a screen for advancing infantry, as was undoubtedly done by German infantry in their advance from Mons, though in a good many cases the alleged atrocity was caused by the inhabitants of villages fleeing before the German advance and being caught between the two armies.

One of the great lessons of the war for non-combatants is: never stop to be caught; clear out and leave deserted towns cleaned of everything edible and potable. The Russians, who are always a century in front where pure activity of brain is concerned, knew that much a century and more ago, when they left Moscow a mere wilderness of empty houses before Napoleon's advance. And in this war they have let it be clearly understood that official Russia will take no responsibility for non-combatants in German or Austrian territory which may be occupied by Russian troops. Which is pure common sense, though in fact, where big cities have been occupied, the Russian troops, wild as many of them are, have behaved rather well. Still, there is a wide difference between the unavoidable massacre of non-combatants who are caught by advancing troops in the blood-drunkenness of battle, and the deliberate use of combatants or non-combatant prisoners as shields.

### Logic in War.

If such a thing as an honourably conducted war were possible it would be quite reasonable for either side to intimate to the enemy that such and such places, being of historic but not of military importance, were not to be bombarded either by artillery or aircraft, and such an intimation would be respected. In dealing with a less honourable enemy one might give notice that these places were occupied by his own men who had been taken prisoners. But in dealing with an absolutely ruthless and strictly logical enemy like Germany such details simply do not count.

Nothing would ever convince a German officer that



the towers of Reims Cathedral were not used as observation posts, and if the cathedral and its vicinity had been filled with German prisoners it would not have made the slightest difference to the bombardment. Unfortunately, their views are confirmed by a photograph published in an American paper, showing Belgian soldiers with a machine-gun in readiness for aircraft, and a telescope, on the look-out on one of the towers of Antwerp Cathedral.

According to the German system of making war, a soldier is only of value so long as he is available as part of the fighting machine. If he is dead, or taken prisoner, or very badly wounded, he is of no further use, and it does not matter what becomes of him. The dead are burned, as the quickest and most sanitary way of getting rid of them. The badly wounded are, one gathers, "assisted" in dying. And if those who are taken prisoners happen to be in the way of their own guns it cannot be helped. Further, no German officer of high rank would even hesitate about turning his guns onto a mixed mob of his own men and enemy troops if the latter were obviously forcing his men back.

It is all very terrible, and it sounds very brutal; but it is cheaper in the end if it wins. It is rather like the theory of poisoning wells. Supposing an attacking army has to advance across a desert, and by poisoning wells, which kill perhaps a hundred men, one can prevent that army from ever crossing the desert at all, the total loss is the original hundred; whereas if the army had been allowed to use the wells and had been opposed by troops, thousands of men might have been killed in covering the same distance. But if, in spite of the poison, that army gets across—as our forces in South-West Africa have done—the poisoners of wells have to pay all the more heavily for it in the end, for the winners are certain to retaliate in degree if not in kind.

#### **A Weak Hand.**

The worst of it is that at present the Allies cannot retaliate on Germany, for the very simple reason that Germany holds so many more prisoners from the Allies' armies than the Allies hold of the Germans' and Austrians', so that while the German Government does not really care in the least what we do with their subjects who are prisoners, they can retaliate very effectually on us, and at the same time can raise still more violent feeling against the Allies among the bulk of the affectionate and sentimental German people, who do care very much what happens to their husbands, sons, and brothers. The trifling incident

#### **A Step in the Right Direction.**

So far as one can gather no official intimation has been issued of the promotion of the Director of the Air Department to the rank of Commodore (2nd Class), the change in rank appearing quite casually in the Navy List. The promotion will be cordially welcomed by the Royal Naval Air Service, in that it gives their chief rank corresponding to that of a Brigadier-General, and so places the R.N.A.S. more nearly on a level with the R.F.C. Commodore Murray F. Sueter, C.B., R.N., has been concerned with the aeronautical branch of the Navy for nearly six years, and has in that time created a highly effective force whose activities already extend practically all over the world, embracing as they do the seaplane carrying ships, the Anti-Aircraft Corps, and the Armoured Car Division at the Dardanelles, not to mention the Naval Airship sections and the Kite-Balloon sections, all of which have added enormously to the personnel apart from the original aeroplane and seaplane forces.

In so huge and heterogeneous a force, dealing with so many allied yet different mechanical problems in so short a time it would be unreasonable to expect perfection of organisation, yet despite all difficulties—the best workman may be hampered by bad tools and outside interference—the forces under the Air

of the retaliation for the mistakenly announced imprisonment of German submarine officers is a ease in point.

#### **Playing the Enemy's Game.**

During the past week various papers were highly elated at the spectacle of numerous un-naturalised alien enemies being rounded up and sent to Southend, where, one gathers, they have been placed on board ships moored in the Thames estuary. This action, following as it does immediately on the Zeppelin attack on the alleged "fortress" of Southend, can only appeal to the Germans as a feeble attempt at retaliation for the aforesaid attack. Nothing has been heard, so far, of German comment on this action, but one may judge that something will be heard, for the senseless attacks by English mobs on shops bearing names which look as if they might be German have already produced threats of reprisals against British prisoners.

German threats of reprisals can be carried out. British threats of reprisals against Enver Pasha, the Grand Vizier, the Emperor Franz Joseph, the Kaiser Wilhelm, the German Crown Prince, and so forth, are merely empty talk.

There are only two ways of retaliating on Germany. We can intern all rich Germans—whether naturalised or not—and we can confiscate all German property in the British Empire, whether in real estate, bricks and mortar, machinery, or stocks and shares, on the clear understanding that it will not be returned after the war. That would hit Germany hard, for there is far more German money invested in the British Empire than there is British money in Germany.

The other alternative is retaliation on the field of battle. Our troops are doing their best, which best is far better than this country has the slightest right to, considering the way the Army has been neglected in the past. The Royal Flying Corps, which was even worse mishandled than the rest of the Army, thanks to military conservatism as well as civilian scheming, has done, if possible, greater things in proportion than have the other arms. When the time comes to retaliate in strength on Germany as a nation the R.F.C. will have still greater opportunities—of which more may be said at a later date—but in the meantime the preliminary stages of retaliation depend on the British workman who has to provide the material with which to retaliate. More and more ammunition, more and more weapons, more and more aircraft are needed, and the British workman can retaliate better by helping to make them than he can by wrecking the shops of Dutch pork-butchers and Swiss bakers.—C. G. G.

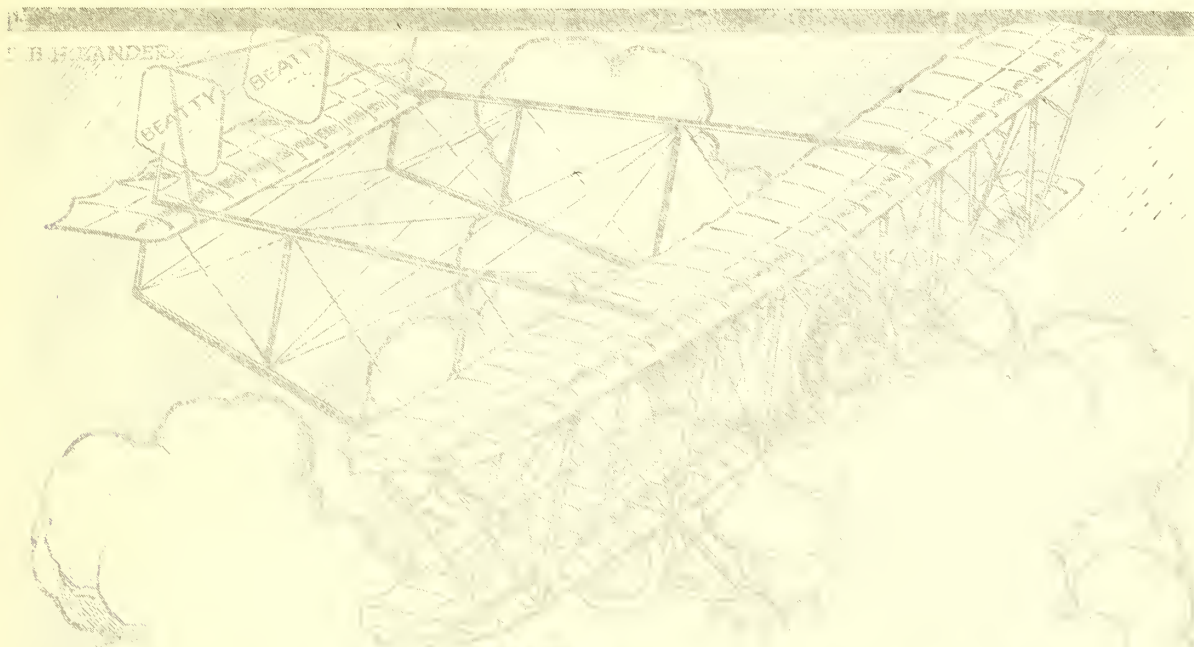
Department, which actually outnumber those under the Department of Military Aeronautics, have already done much valuable work.

Certain portions of those forces may never have an opportunity of showing their Service value because they cannot come into action except in the case of a German invasion of this country, though presumably in the event of the collapse of the German West front and the smashing of the German Fleet the whole force will be sent abroad to assist in the final disintegration of Germany.

Nevertheless the work of creating all these branches out of nothing had to be done, and it has been done surprisingly well. Therefore this promotion, which one assumes is only a step towards putting the R.F.C. and R.N.A.S. on an equality as regards the official precedence of their chiefs, is welcomed by the officers in charge of the various departments inside the Air Department as a recognition of their own efforts.—C. G. G.

#### **For the R.F.C.**

Lady Henderson, President of the Royal Flying Corps Aid Committee, will be very grateful for one or two gramophones and some records for the flying men at the front. They should be sent to the Committee's new address "Surrey House, Marble Arch, W."



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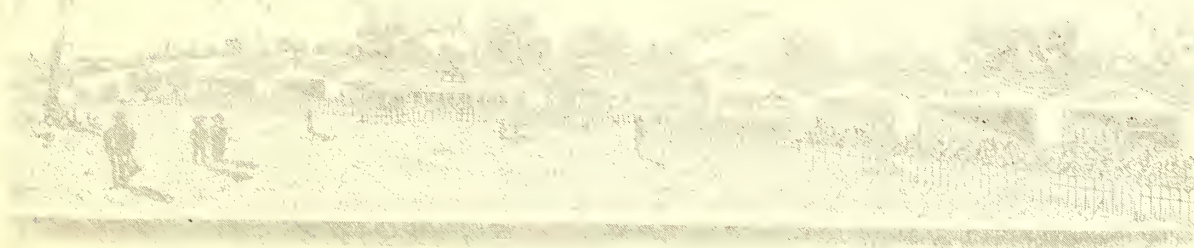
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## Naval and Military Aeronautics.

### GREAT BRITAIN.

From the "London Gazette," May 11th, 1915.

ADMIRALTY, MAY 7TH.

ROYAL NAVAL AIR SERVICE.—Proby. flight sub-lieuts. confirmed in rank of flight sub-lieut.: A. C. Teesdale. November 10th. C. N. Leeston-Smith. November 19th. O. N. Walmesley. November 23rd. J. S. Mills. November 27th. F. Besson. December 21st. E. de C. Hallifax. January 4th. J. B. P. Ferrand. February 6th. J. F. Hay. February 10th. R. B. Munday. February 16th. R. C. Hardstaff. February 27th. Proby. flight sub-lieut. for temp. service confirmed in rank of flight sub-lieut. for temp. service: A. C. Saw. January 28th.

\* \* \*

WAR OFFICE, MAY 11TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officer.—Sec. Lieut. R. A. Archer, R.A., and seconded. April 28th.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieuts. (on prob.) confirmed in rank: V. A. H. Robeson, M. R. H. A. Allen, L. W. Yule.

\* \* \*

From the "London Gazette," May 12th, 1915.

WAR OFFICE, MAY 12TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officer.—Sec. Lieut. F. H. Jenkins, S.R. April 23rd.

\* \* \*

From the "London Gazette," May 13th, 1915.

WAR OFFICE, MAY 13TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers—April 30th: Lieut. G. Allen, Conn. Rangers, and seconded; Lieut. C. C. Darley, R.A., and seconded; Sec. Lieut. L. W. Yule, S.R.; Sec. Lieut. V. A. H. Robeson, S.R.; Sec. Lieut. M. R. H. A. Allen, S.R. Asst. Equipmt. Officer.—Sec. Lieut. D. J. MacDonald, N. Scot. R.G.A., T.F. May 1st.

\* \* \*

From the "London Gazette," May 14th, 1915.

ADMIRALTY, MAY 10TH.

ROYAL NAVAL AIR SERVICE.—Flight lieuts. to be flight coms.—H. A. Littleton, C. D. Breese, E. R. C. Nanson, E. H. Sparling, R. G. Lock, A. D. Cunningham, J. W. O. Dalgleish, R. H. Kershaw, D. G. Young, R. E. C. Peirse, D.S.O., Right Hon. Lord E. A. Grosvenor, G. R. Bromet, L. Tomkinson, J. R. W. Smyth-Pigott. May 7th.

Flight lieut. for temp. service to be flight com. for temp. service.—H. Delacombe. May 7th.

Flight sub-lieuts. to be flight lieuts.—F. W. Strong, P. C. V. Perry, R. E. Nicoll, J. O. Groves, D. K. Johnston, K. S. Savery, M. S. Marsden, T. H. England, D. Iron, F. G. T. Dawson, V. Nicholl, A. F. Bettington, M. E. A. Wright, B. L. Huskisson, J. J. Petre, E. I. M. Bird. May 7th.

Flight sub-lieuts. for temp. service to be flight lieuts. for temp. service.—H. D. Cutler, E. R. Moon, R. P. Cannon, R. E. Penny, E. H. Dunning. May 7th.

May 12th.

ROYAL NAVAL AIR SERVICE.—W. F. MacNeece to be flight lieut. April 19th.

\* \* \*

WAR OFFICE, MAY 14TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers—April 28th: Capt. D. W. Powell, Northants, and seconded; Sec. Lieut. H. R. Nicholl, S.R.; Sec. Lieut. A. R. H. Browne, S.R.; Sec. Lieut. H. MacD. O'Malley, S.R.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. lieuts. to be lieuts. April 24th: W. B. Rhodes-Moorhouse (since died of wounds), H. Blackburn, W. C. Adamson, H. C. Tower, M. B. Blake, Hon. W. F. F. Sempill, Master of Sempill; R. M. Pike, E. F. Norris, M. McB. Bell-Irving, G. C. N.

Nicholson, F. W. Polehampton (since killed in action), E. G. S. Walker, M. G. Christie, E. E. Hodgson.

Sec. lieuts. (on prob.) confirmed in rank: A. R. H. Browne, H. R. Nicholl, H. MacD. O'Malley, C. H. Pixton.

### NAVAL.

The following appointments were notified at the Admiralty on May 11th:—

ROYAL NAVAL AIR SERVICE.—Flight Lieuts. (Actg. Flight Coms.)—C. D. Breese and A. D. Cunningham. Flight Lieuts.—H. A. Littleton, J. W. O. Dalgleish, J. R. W. Smyth-Pigott, R. E. C. Peirse, D.S.O., Lord Edward Arthur Grosvenor, E. R. C. Nanson, L. Tomkinson, E. H. Sparling, R. G. Lock, R. H. Kershaw, D. G. Young, G. R. Bromet, and H. Delacombe (temporary), promoted to the rank of flight commanders, with seniority May 7th.

Flight Lieuts.—C. Fuller, T. D. Mackie (temporary), and C. M. Murphy, granted acting rank of flight commanders, to date May 7th.

Flight Sub-Lieuts.—B. S. Benning, E. J. Cooper, W. L. Welsh, G. F. Breese, W. K. F. G. Warneford, S. E. Ritchie, G. H. Scott, and D. M. Barnes (temporary), granted the acting rank of flight lieutenants, to date May 7th.

Flight Sub-Lieuts.—E. I. M. Bird, F. W. Strong, R. E. Nicoll, E. H. Dunning, B. L. Huskisson, A. F. Bettington, F. G. T. Dawson, M. S. Marsden, P. C. V. Perry, D. K. Johnston, E. R. Moon, K. S. Savory, T. H. England, D. Iron, V. Nicholl, M. E. A. Wright, J. J. Petre, and Temp. Flight Sub-Lieuts.—R. E. Penny, H. D. Cutler, R. P. Cannon, and J. O. Groves, promoted to the rank of flight lieutenants, to date May 7th.

\* \* \*

The following appointments were notified at the Admiralty on May 12th:—

ROYAL NAVAL AIR SERVICE.—Mr. C. E. Amphlett granted a temp. commission as lieut., R.N.V.R., with seniority May 1st; and Messrs. R. A. Davey (with seniority May 11th), and C. S. Fox, C. E. Walker, and F. M. Milligan as sub-lieuts., R.N.V.R., with seniority May 11th and May 1st respectively, and all appointed to the "President," additional, for R.N.A.S.

Prob. Sub-Lieut. R. T. A. Ormsby confirmed as sub-lieut., with seniority April 1st, 1913, and appointed acting lieut., to date April 17th.

Temp. Sub-Lieut. A. H. Davies, appointed temp. acting lieut., to date May 4th.

\* \* \*

The following appointments were notified at the Admiralty on May 13th:—

ROYAL NAVAL AIR SERVICE.—The following have been promoted to the rank of temp. lieut.-coms., R.N.V.R.: E. Kerr and A. Congreve, to date April 27th.

The following have been promoted to the rank of temp. lieuts., R.N.V.R.: A. Hansford, J. F. Hedley, and E. N. G. Morris, to date April 27th.

The following have been entered as prob. flight sub-lieuts. and appointed to the "President," additional, for R.N.A.S., to date as stated: C. C. R. Edwards, May 17th; N. G. H. Sturt, May 12th; as well as N. Blackburn and C. C. Wyllie, for temp. service, to date May 17th.

Capt., Royal Flying Corps, W. F. MacNeece transferred to R.N.A.S., as flight lieut., and appointed to the "President," additional, for R.N.A.S., to date April 19th.

Flight Sgt., R.F.C., H. MacGrane transferred to R.N.A.S., as warrant officer second grade, and appointed to the "President," for R.N.A.S., to date May 19th.

ROYAL NAVAL VOLUNTEER RESERVE.—Warrant Officers, R.N.A.S., C. Tyrer and A. Dudley granted temp. comms. as sub-lieuts., and appointed to the "President," additional, to date May 11th.

\* \* \*

The following appointments were notified at the Admiralty on May 14th:—

ROYAL NAVAL AIR SERVICE.—Temp. Sec. Lieuts.—T. A. Moncton and R. V. Southwell granted temp. commissions

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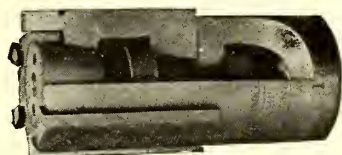
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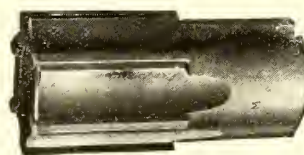
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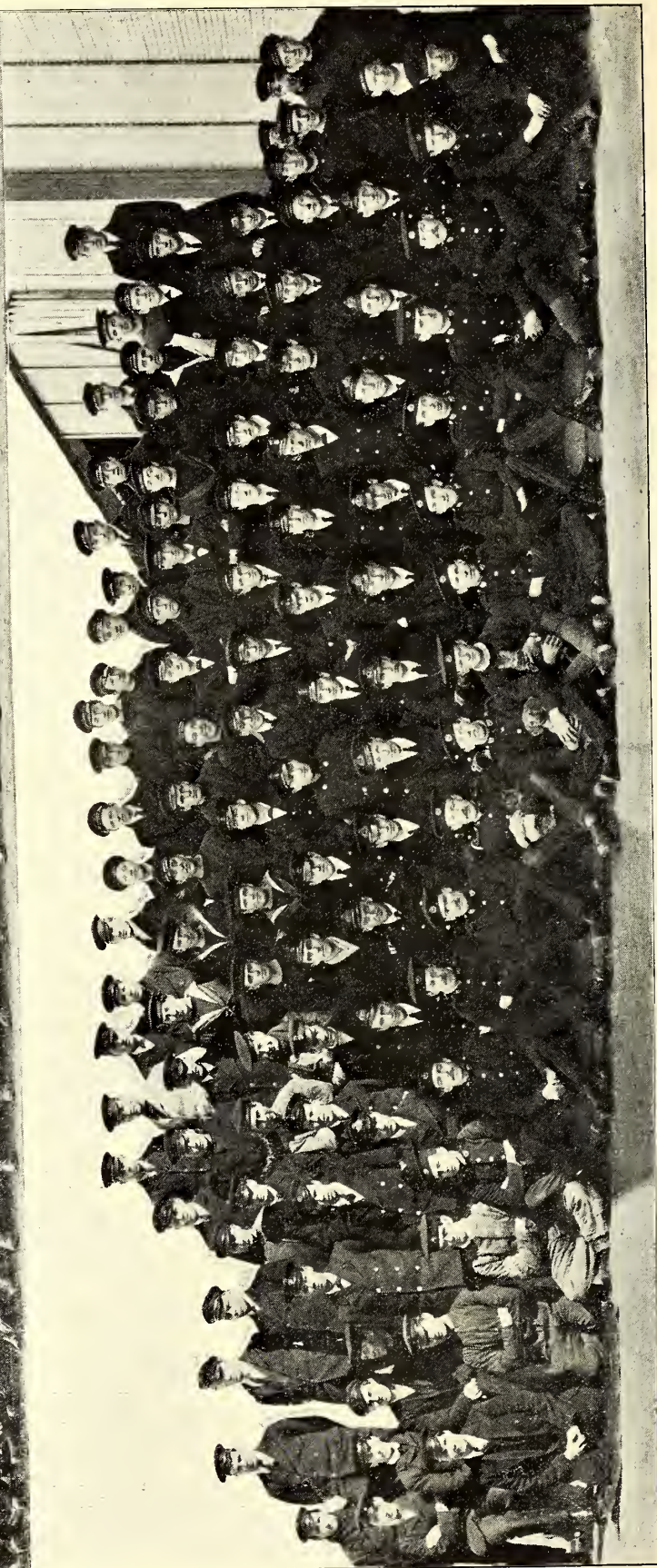
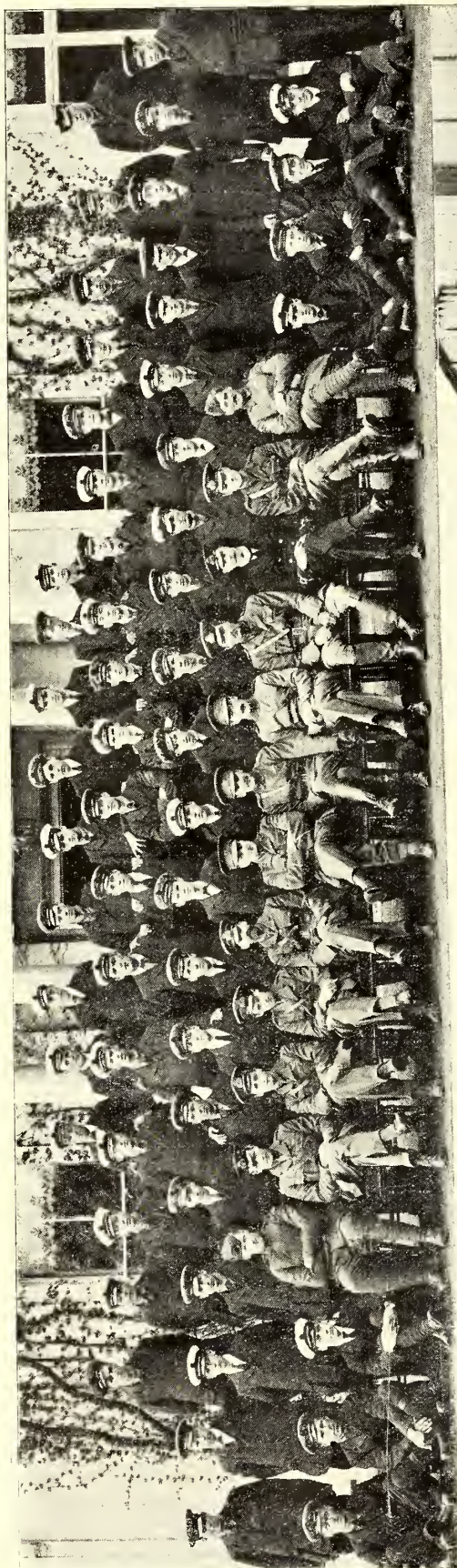
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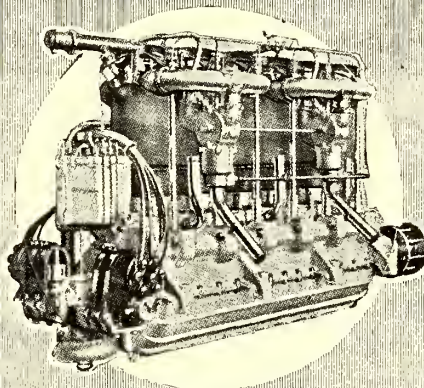


Above, a portion of the personnel of the R.N. Air Station at Roehampton,

Below, a portion of the personnel of the R.N. Air Station at Isle of Grain.



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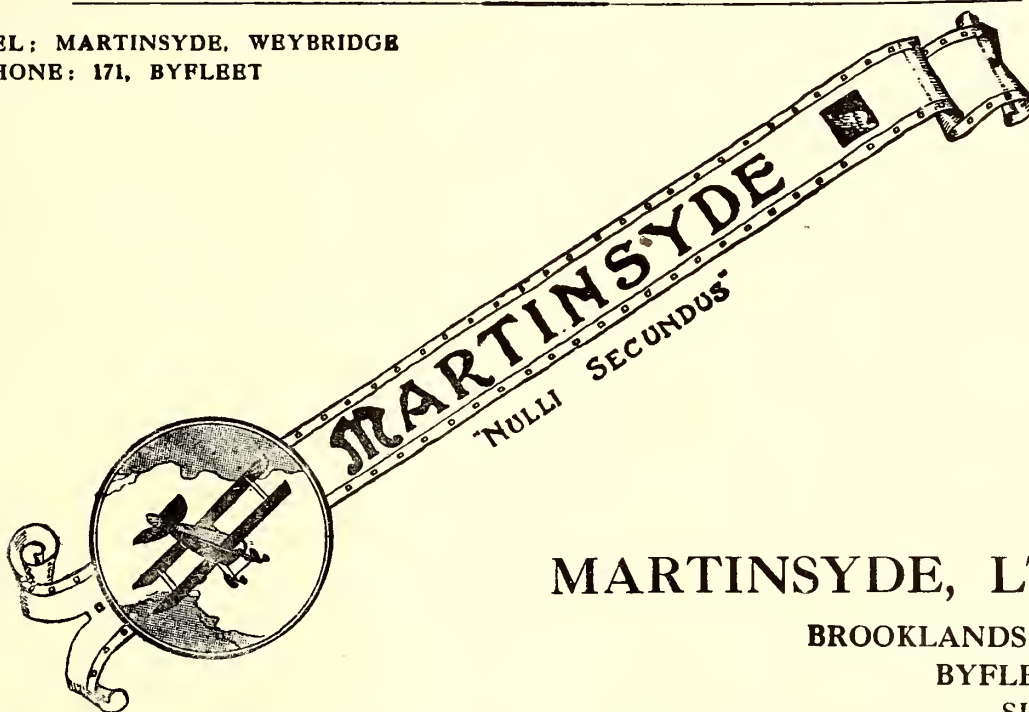
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as lieut. R.N.V.R., and appointed to the "President," additional, for duty with R.N.A.S., to date May 12th.

Messrs. T. C. B. Hooke and C. F. Abell entered as lieuts. R.N.V.R., and appointed to the "President," additional, for duty with R.N.A.S., to date May 13th.

Mr. T. S. Sharratt entered as sub-lieut. R.N.V.R., and appointed to the "President," additional, for duty with R.N.A.S., to date May 13th.

\* \* \*

The following appointments were notified at the Admiralty on May 17:—

**ROYAL NAVAL AIR SERVICE.**—Flight Sub-Lieutenant C. E. Wood to be lent to Central Flying School as assistant instructor.

Temporary Lieutenant (R.N.V.R.) J. Fraser promoted to temporary lieutenant-commander R.N.V.R., May 13.

Chief Petty Officer A. S. Hellawell, promoted to warrant officer 2nd grade for temporary service, and appointed to "President," additional, for R.N. Air Service, to date May 14th.

Probationary Flight Sub-Lieutenants C. E. Wood, R. A. J. Warneford, C. Johnson, C. Tollemache, G. Donald, and G. H. Beard, all confirmed as Flight Sub-Lieutenants.

V. Nicholson and C. G. Carlisle, both entered as Probationary Flight Sub-Lieutenants for temporary service, and appointed to "President," additional for R.N. Air Service, to date May 16.

\* \* \*

The Secretary of the Admiralty announced on May 11th the following casualty:—

#### DARDANELLES OPERATIONS.

##### WOUNDED.

Reported under date May 9th:—

Sub-Lieut. Douglas Illingworth, R.N.V.R., Armoured Car Division

\* \* \*

The Secretary of the Admiralty announced on May 12th the following casualty:—

#### DARDANELLES OPERATIONS.

##### WOUNDED.

Lieut.-Comr. Josiah C. Wedgwood, R.N.V.R., M.P., Armoured Car Division.

\* \* \*

The Secretary of the Admiralty announced on May 13th the following casualty:—

##### KILLED.

Flight Sub-Lieut. Harold J. Batchelor (May 11th).

Though no official information has been issued, it is reported that Sub-Lieut. Batchelor was lost while flying a seaplane in the North Sea. He was officially attached to the R.N. Flying School at Eastchurch as late as March last.

Harold James Batchelor was born on March 3rd, 1889, in Dublin. He took his certificate, No. 1014, on a Short biplane at the Royal Naval Flying School, at Eastchurch, on December 22nd, 1914, while a Probationary Flight-Lieut., and was eventually appointed for service with seniority of November 25th, 1914.

\* \* \*

The Secretary of the Admiralty announced on May 14th the following casualty:—

#### MISSING.

Probationary Flight Sub-Lieut. John O. Groves, R.N.A.S.

John Osborn Groves, officially reported missing, was born at Lymm, Cheshire, on May 28th, 1890, and took his certificate, No. 980, on a Grahame-White biplane at Hendon on November 25th, 1914.

It is not explained how an officer apparently still on probation came to be on active service, nor is it stated where or how he was lost.

\* \* \*

On the afternoon of May 17th the Secretary of the Admiralty made the following announcement:—

The Zeppelin that attacked Ramsgate early this morning was chased off by Eastchurch and Westgate machines as far as the West Hinder Lightship.

When off Nieuport she was attacked by eight naval machines from Dunkirk. Three machines were able to attack her at close range by fire. Flight-Commander Bigsworth dropped four bombs when 200 ft. above the airship. A large column of smoke was seen to come out of one of her compartments.

The Zeppelin then rose to a great height (11,000 ft.) with her tail down, and is believed to be severely damaged.

All our machines were exposed to a heavy fire from the Zeppelin. No casualties.

As the first officially recorded action between an airship and aeroplanes, the incident is of more than ordinary importance, and the advocates of the heavier-than-air machine have the satisfaction of seeing that the aeroplanes escaped without casualties, while the airship was apparently damaged. It must, however, be noted that a French report states that a Zeppelin which was attacked by two aeroplanes some time ago shot them both down.

If one gas-bag of the airship had been set on fire, the whole thing would certainly have come down in a blazing mass, as the L. 11 did at Johannisthal, and the pilots of the various aeroplanes could not have failed to see it fall if they were within five miles of it.

Therefore only two alternatives present themselves. Either an incendiary bomb, of the "adhesive" type, caught onto the outer visible envelope of the airship, which would undoubtedly be coated with non-inflammable "dope," and fried it so that it smoked heavily without bursting into flame, the inner gas-bag being protected by the air-space outside it. Or the smoke mentioned in the despatch was produced by the sudden tilting up of the nose of the machine, causing the oil in the sumps of the engines to run back into the rear cylinders and spout out through the exhaust-pipes. It will be remembered that a similar cloud of smoke is produced by oil running forward in the engines of the German aeroplanes when they dive vertically to escape pursuit.

The fact that the Zeppelin rose to a height estimated at 11,000 feet goes to show that she was not actually wrecked, unless the sudden jerk upwards broke something and caused her to collapse later on. It is recognised that, if a big airship of the Zeppelin or Schütte-Lanz type suddenly jams her tail down while going full speed ahead, she can rise a matter of



A "Tail-Down" Zeppelin—showing how this type of airship climbs normally. She is here shown getting up from Lake Constance. When in a hurry the tail is considerably more depressed. Reference to the dispatch above shows a possibility of undue official optimism.



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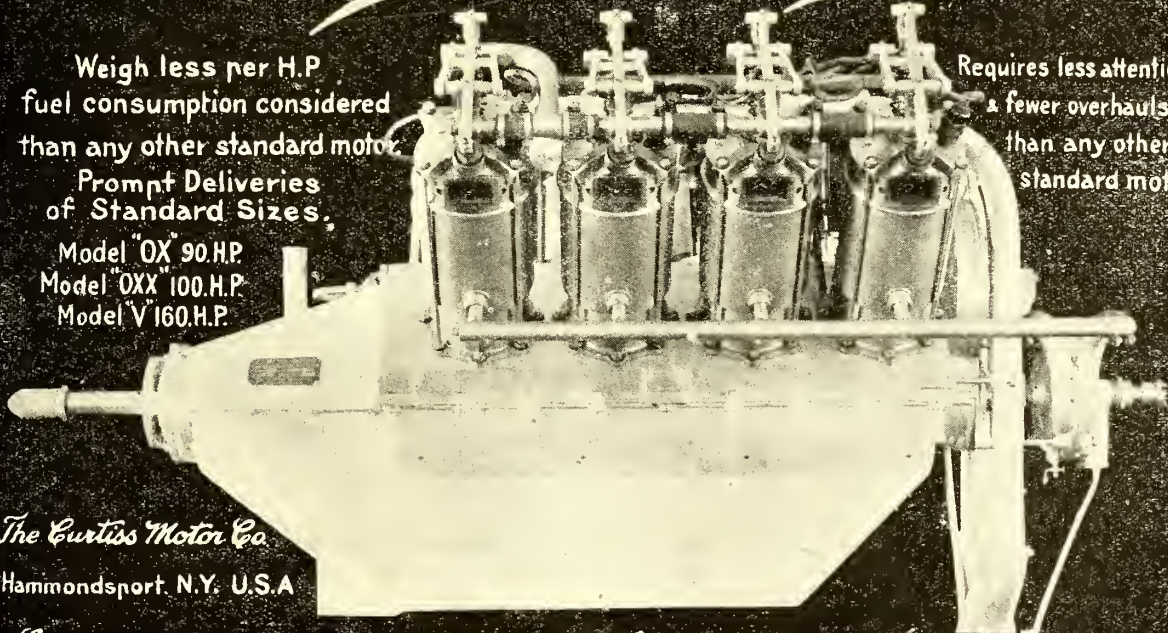
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1,000 feet in very little over half a minute, so great is the lift given to her under surface by the air pressure caused by her momentum. Officers who took part in the Cuxhaven raid were considerably surprised by the rapid climb of a Schütte-Lanz when, in the words of one of them, she "lost her nerve and sat on her tail."

Naturally such a rate of climb cannot be maintained, and the limit of height is less than that of a good aeroplane. Therefore the lesson is that we must have more and more small, fast-climbing, high-speed "tabloid" scouts, capable of carrying half a dozen bombs—some of which should, presumably, be high-explosives and some incendiary.

Machine-gun fire can have little effect against big airships, for mere perforation of the envelopes is simply waste of ammunition. Rifle-bullets can only be effective against the cars of an airship, and then only if they puncture the petrol tanks, smash the engines, or lay out the crew. The chances against either are very great. Incendiary bullets are unlikely to have any effect against Zeppelins, for they will probably only burn a hole in the outer skin, and if they ever penetrate the gas-bags will probably be extinguished by burying themselves in pure hydrogen, which can only burn if mixed in the right proportions with oxygen. It therefore appears as if a combined high-explosive and incendiary bomb is necessary.

Congratulations are due to the officers from Eastchurch and Westgate on venturing so far a-sea on land machines, and also to the officers who cut off the vessel's retreat at Nieuport. One hopes that it may ultimately be proved that the airship was brought down and wrecked, as some Dutch reports state, though one fears this is unlikely.

Flight-Commander Bigs-worth, R.N., who is officially mentioned in the dispatch, is known in the Service as a steady and reliable pilot, with excellent judgment and skill of the right sort. Before the war he was second in command at Calshot, and did much good work there, especially in experiments with the big Short biplane carrying a 1½-pounder gun. He has made a special study of aeroplanes as weapons of offence rather than as accessories for acrobats, and has evidently turned his experience to good account.

A dispatch to the "Daily Mail" from Mr. James Dunn of Rotterdam, whose news is generally very accurate, says:—

"The Zeppelin rose to a great height and the aeroplane was driven off by the anti-aircraft guns protecting the aerodrome near Bruges. The airship returned to the Berchem shed, near Brussels." This appears to refer to the same Zeppelin mentioned in the dispatch above.

\* \* \*

A marriage has been arranged, and will take place on July 21st, between Flight Commander Arthur B. Gaskell, Royal Naval Air Service, only son of the late Charles B. Gaskell and Mrs. Gaskell, of Clifton, Bristol, and Dorothy, eldest daughter of R. H. Arlingham Davies and Mrs. Davies, of Crickhowell, Breconshire. The ceremony will be a quiet one owing to the war.

#### MILITARY.

The following passages in the descriptive account, published on May 13th, which has been communicated by an Eye-Witness present with General Headquarters continuing and supplementing the narrative published on the 10th inst. deal with aircraft:—

May 11th, 1915.

During the day (May 9th) our aeroplanes attacked several points of importance. One of our airmen, who was sent to bomb the canal bridge near Don, was wounded on his way there, but continued and fulfilled his mission.

Near Wytschaete one of our aviators pursued a German aeroplane, and fired a whole belt from a machine-gun at it. The "Taube" suddenly swerved, righted itself for a second, and then "nose-ended" from a height of several thousand feet straight to the ground.

On the other hand, a British machine was unfortunately brought down over Lille by the enemy's anti-aircraft guns, but it is hoped that the aviator escaped.

[See the French and German communiqués published on May 11th.—Ed.]

Allusion has already been made to an absurd story printed in the "Frankfurter Zeitung" of December 18th, according to which one Erich Callies, volunteer, in hospital at Leipzig-Plagnitz, stated that when a prisoner of war with the British he had been forced to make flights on an aeroplane, to identify the German troops, and to throw bombs upon them. Lies die hard, however, and this one has cropped up again in another form. A vague statement to the same effect has been officially circulated amongst some of the British officer prisoners in Germany, and those of the Royal Flying Corps have been warned that any recurrence of this—imaginary—behaviour on the part of their comrades will entail severe measures being taken against those in captivity. It is difficult to say whether the authorities in Germany really believe that we have been taking prisoners up in aeroplanes or whether they are merely making use of the newspaper article as an excuse for future ill-treatment of our officers.

\* \* \*

The following passage in the descriptive account which has been communicated by an Eye-Witness present with General Headquarters continuing and supplementing the narrative published on the 12th inst. deals with aircraft:—

May 14th.

On Monday, the 10th . . . one of our airmen had a thrilling experience. He was alone in a single-seater aeroplane, in pursuit of a German machine. While trying to reload his machine-gun he lost control of the steering gear, and the aeroplane turned upside down. The belt round his waist happened to be loose, and the jerk of the turn almost threw him out of the machine, but he saved himself by clutching hold of the rear centre strut—the belt slipping down round his legs.

While he hung thus, head downwards, making desperate efforts to disengage his legs, the aeroplane fell from a height of 8,000 feet to about 2,500, spinning round and round like a falling leaf. At last he managed to free his legs and reach the control lever with his feet. He then succeeded in righting the machine, which turned slowly over, completely "looping the loop," whereupon he slid back into his seat. This constitutes a record even in a service where hairbreadth escapes are of daily occurrence.

[Actually it is doubtful whether it did "loop the loop," for the machine appears to have turned over sideways in doing a sharp uncontrolled turn. Nevertheless, the experience is somewhat out of the ordinary. A very similar incident happened, as was related at the time, to a Naval pilot over the Channel at the time of the raid on Ostend, only in his case he lost his "orientation" in a thick cloud, and only realised that he was upside down when his pistol fell out of his pocket.—Ed.]

There have been many duels in the air, which have invariably resulted in our favour, several German machines having been brought down either by our aeroplanes or anti-aircraft guns. A few of our machines have also been hit and forced to descend, though this has not been brought about by the enemy's aviators, but by gun and rifle fire from the ground.

\* \* \*

The following casualty to an officer in the Expeditionary Force is reported from General Headquarters under date May 9th:—

#### WOUNDED.

Robinson, Sec. Lieut. W. L., Worcester Regt., attd. Royal Flying Corps.

\* \* \*

The following casualties among officers in the Expeditionary Force are reported from General Headquarters under date May 10th:—

#### KILLED.

Rodney, Sec. Lieut. Hon. W. F., Rifle Brigade and Royal Flying Corps.

Spence, Lieut. C. B., Royal Field Artillery and Royal Flying Corps.

#### DIED OF WOUNDS.

Fox, Capt. A. G., Royal Engineers and Royal Flying Corps.

#### WOUNDED.

Jackson, Lieut. J. L., 3rd Connaught Rangers and Royal Flying Corps.

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## MISSING.

Eberli, Lieut. F. H., Royal Field Artillery and Royal Flying Corps.

Sanford, Lieut. S. A., 7th Dragoon Guards and Royal Flying Corps.

\* \* \*

The following casualties in the Expeditionary Force are reported from General Headquarters under date May 11th:—

## MISSING.

Corbett-Wilson, Lieut. D., Royal Flying Corps.

Woodiwiss, Sec. Lieut. I. N., Lincolnshire Regiment, att'd. Royal Flying Corps.

[It will be noted that while these officers are officially reported missing they are privately reported to be dead. News of their deaths can only have reached their relatives from the R.F.C., and any official report must have come from the same source, so some explanation seems necessary. It has already been mentioned that R.F.C. casualties have not been published with accuracy or promptitude, and it is to be hoped that no deliberate attempt is being made to give the impression that the Corps' casualties are less than they are in fact.—Ed.]

\* \* \*

The following appeared in the obituary columns on May 14th:—

**SPENCE.**—Killed in action on the 9th May, Lieut. Charles Bennett Spence, R.F.A. and Royal Flying Corps, younger son of Dr. Spence, of Burntwood, near Lichfield, aged 26 years.

Charles Bennett Spence was born on June 30th, 1888, at Lichfield, and was gazetted to the Royal Artillery with seniority of December 23rd, 1913. He took his certificate, No. 649, at the Bristol School at Brooklands, the certificate being dated October 13th, 1913.

He passed through the Central Flying School during the first course of last year, and was appointed to the Royal Flying Corps with seniority of April 29th, 1914.

He was a very capable flier and had been mentioned in dispatches earlier in the war. Popular with his brother officers and highly valued by his seniors, he will be greatly missed in the Corps.

\* \* \*

The following appeared in the obituary columns on May 15th:—

**FOX.**—Killed in France on May 9th, whilst carrying out a very important mission. Captain Alan Geoffrey Fox, Royal Engineers and Royal Flying Corps, aged 27, only surviving son of Mr. and Mrs. Charles Fox, 30, Ladbroke Gardens, W.

Alan Geoffrey Fox was born on November 6th, 1887, in London, and passed into Woolwich in 1906. He was gazetted to the Royal Engineers on February 7th, 1908, and was given his step to Lieutenant in July, 1910. He was one of the first officers appointed officially to learn to fly, in the days of the old Air Battalion, in 1911, when the aeroplane branch consisted of four or five officers and two or three primitive box-kites, under Captain (now Lieut.-Colonel) Fulton at Lark Hill. Lieut. Fox, as he then was, took his certificate, No. 176, on one of these machines, the certificate being dated January 30th, 1912, his instructor being Captain Fulton himself.

Mr. Fox quickly showed himself to be one of the finest pilots this country has ever seen. His quickness of hand and eye, and his judgment were splendid. Moreover, he was far from being the mere theoretical Sapper, for he was a genuine mechanical engineer of high ability, and as a result any aeroplanes with which he was concerned were always kept in first class order, properly tuned and in a safe state to fly.

As the R.F.C. began to grow he was appointed to No. 3 Squadron, which, under Major (now Lieut.-Col.) Brooke-Popham, first at Lark Hill and then at Netheravon, carried out so much valuable experimental work and turned out so many fine pilots, and incidentally did so much to raise the standard of safety of Service aeroplanes on practical lines without relying on theoretical factors of safety.

During the manoeuvres of 1912, in which aircraft played a small but useful part, and again in 1913, when they upset

everyone's calculations to such an extent that the results of their scouting had to be largely ignored to prevent a dead-lock in the proceedings, Captain Fox did much valuable work. He was promoted to Flight Commander and temporary Captain in November, 1912.

When the R.F.C. went abroad at the beginning of the war, Captain Fox commanded a flight, and at a later date ran the whole squadron for a period. He might well, on his flying service and on his technical ability, have been a squadron commander, but possibly his intellectual honesty, which impelled him always to say what he thought about Service aeroplanes and their fitness for use, may have prevented him from acquiring as much favour as his good work deserved.

While on service abroad he did much valuable work, and he was mentioned in dispatches. On one occasion while flying a new tabloid biplane to France, he covered the journey from Farnborough to the R.F.C. headquarters at St. Omer—a distance of about 150 miles—in an hour and ten minutes, which is about the fastest cross-country flight on record.

He lost his life in as brave an effort as any officer of the R.F.C. has made. He set out to blow up an important bridge over a canal behind the German lines, and, it is believed, was successful, but he was mortally wounded in the attempt, and died of his wounds on his return. One hopes to see his gallantry duly honoured.

In him the R.F.C. has lost not only a very gallant officer and a brilliant pilot, but a technical man of very high value. To his bereaved parents one offers the condolences of all concerned with aviation.

\* \* \*

The following appeared in the obituary columns of May 15th:

**CORBETT-WILSON.**—Killed on May 10th, whilst making a reconnaissance over Fournes, Lieutenant Denys Corbett-Wilson, Royal Flying Corps, only son of Mrs. Corbett-Wilson, 3, Basil Mansions, S.W.

Denys Corbett-Wilson, of Darver, County Kilkenny, was born on September 24th 1882, at Thames Ditton. Before taking to flying he was well known in Ireland as a hunting man, and he rode to hounds as he flew, like a thorough sportsman, determined to be with the first flight and stick there. As a result he took innumerable tosses, but he made his reputation. He took his aviator's certificate, No. 722 on the French list, at Buc on January 18th, 1912, after a somewhat lengthy period of experiment at the Blériot School at Hendon, in which he had the distinction of smashing three machines in three days.

Like many slow beginners, he became a brilliant if somewhat rash pilot. His famous race to Ireland, when his competitor, Mr. Damer Leslie Allen, disappeared mysteriously after leaving Holyhead, will be remembered by all old-timers. Mr. Corbett-Wilson eventually landed near Enniscorthy in the County Wexford, after making astonishing landings among the Welsh mountains and restarting from apparently impossible places in the South of Ireland. He flew to Ireland again, later on, and also flew in France, making a trip over part of the Alps from Buc into Switzerland, and acquired quite a reputation as a daring but withal skilful pilot.

When war broke out he joined the R.F.C. as a Special Reserve officer, being appointed Lieutenant in the S.R. in October of last year, and he was gazetted a flying officer in November. It was he who was piloting the machine in which Mr. Robert Loraine was wounded. He did a great deal of daring flying since he joined the Corps, but escaped undamaged. Like so very many officers who are real sportsmen, he was an only son, and all will offer their sincere sympathy to his widowed mother.

\* \* \*

The "Morning Post" states that Second Lieutenant Isaac Newton Woodiwiss, Lincolnshire Regiment and Royal Flying Corps (killed in action), was born in August, 1896, and educated at Cheltenham and Sandhurst. He obtained his commission in November of last year. He was the son of Mr. Isaac Woodiwiss, of Trusthorpe Manor, Lincolnshire, and grandson of the late Sir Abraham Woodiwiss. He was not a certificated aviator, and was presumably attached as an observer to the R.F.C.

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The "Morning Post" states that Second Lieutenant the Hon. William Francis Rodney, Rifle Brigade and Royal Flying Corps (killed in action), was born in October, 1896, and obtained his commission in December last. He was the fourth son of the seventh Baron Rodney and brother of the present Lord Rodney. He was not a certificated aviator, and was presumably attached to the R.F.C. as an observer.

Lieut. Francis Hermann Eberli (missing) was born in London on June 8th, 1889, and took his certificate, No. 817, on a Vickers biplane at Brooklands on June 24th, 1914.

Lieut. Sanford (missing) was also apparently attached as an observer to the R.F.C., as he is not an aviator.

It now appears that the late Lieut. Gladstone, R.F.C., a grandson of the great Mr. W. E. Gladstone, who was reported as killed last week, was shot while in a trench and was not killed on flying duty. He was not a pilot.

It is announced in the "Court Circular" that on Thursday, May 13th, Capt. A. H. L. Soames, Royal Flying Corps, and Second Lieutenant D. S. Jillings, Royal Flying Corps, had the honour of being received by the King, when his Majesty decorated them with the Military Cross.

The "Court Circular" states that the following officers had the honour of being received by the King at Buckingham Palace on May 15th, when his Majesty invested them with the Insignia of Companions of the Order into which they have been admitted:—

The Distinguished Service Order: Lieutenant-Colonel J. Salmon, Royal Flying Corps; Major G. Carmichael, Royal Flying Corps.

In the King's Bench Division, on May 17th, Capt. Chas. Gordon Bell, Royal Flying Corps, South Farnborough, was the defendant in a running-down case, and the jury assessed the damages at £100. A lad named Harold Joliffe was riding a bicycle along High Street, Kensington, when he was run into by defendant and seriously injured. The defence was a plea of contributory negligence.

#### AT SEA.

On May 11th, Frank Bucknole, skipper of the Lowestoft steam trawler, "Crimson Rose," when in the North Sea 45 miles from Lowestoft shortly before 8 p.m., heard an engine and saw a Zeppelin flying low towards him.

The airship is said to have passed over his vessel at about 500 feet, circled round, and hovered about for nearly an hour. The skipper put out all lights.

A steamer was some distance away, and the airship headed in her direction. Shortly afterwards the skipper heard an explosion, but as it was dark he could not see what happened. Thinking that the airship would return, he and his crew got into the boat, just in case. In the increasing darkness they saw the Zeppelin travelling towards the English coast. They then reboarded their vessel.

Numerous reports have been made during the past week of Zeppelins being seen at various places in England and France. Doubtless the majority of the reports have originated from the activity of Allied aircraft, or of Allied brains.

#### FRANCE.

The communiqué of May 11th, says:—

One of our aeroplanes bombarded a shed for dirigibles at Maubeuge and a fire occurred there.

A hostile aeroplane threw bombs without result on the station at Doullens. Another was pursued between the Argonne and the Meuse by a French aviator and was obliged to land within the German lines, where it took fire.

Elsewhere the Germans brought down a British aeroplane, while the British troops brought down two German aeroplanes.

The communiqué of May 15th says:—

We captured more houses in the northern part of Neuville, blew up a German captive balloon to the east of Vimy, while our aeroplanes bombarded the station of Somain.

It is reported from Paris that on May 11th a German aeroplane, described with usual journalistic carelessness as a "Taube," flew over the St. Denis suburb and dropped 5 bombs. One wrecked the upper part of a house near the market. No one was injured, but the hands of the market clock were torn off. The second fell on a house and set fire to it. A little boy asleep upstairs received slight injuries. The third exploded in the road, killing a horse and wounding six soldiers. The other two bombs made large holes.

It is reported that the aeroplane was either a machine captured from the French or else one disguised as a French machine. After a quarter of an hour the aeroplane disappeared and French aeroplanes were sent in pursuit.

There are, of course, now many German aeroplanes built on French lines, and generally very much better constructed, thanks to German thoroughness and pertinacity.

It is said that on the morning of May 12th two German aviators flew over Compiègne and Caudry, throwing bombs. No harm was done.

It is reported that on May 13th four German aeroplanes were signalled about 7.30 a.m. making for Paris. They were headed off by a squadron of French aeroplanes and compelled to turn back.

Reports from Calais on May 17th state that at about 12.30 a.m. a Zeppelin circled round the town, then flew across it. The alarm was given, and searchlights were turned on. Anti-aircraft guns shelled the Zeppelin, which rose so that all bombs missed their marks except one, which fell on a house in an outlying suburb. Three children and an old lady were killed.

The correspondent of the "Morning Post" in Northern France, writing on May 17th, says:—

"In the air the Germans have renewed their activities. During last night three Zeppelins have been hovering over the Pas de Calais. They made another attack on the town of Calais, and from as far away as Boulogne their fire bombs could be seen falling. They endeavoured to work their way down coast by Cape Grisnez, but apparently were beaten back; but at least one of them was sighted towards Samer, west of Boulogne. [Surely Samer is South-East of Boulogne on the Abbeville Road.—Ed.] They were attacked by squadrons of aeroplanes, and it seems that the numbers and persistency of these proved too much for the monsters, for they disappeared to the north-east. The damage done is of no importance, but several women were again killed."

#### GERMANY.

The communiqué of May 11th says:—

South-west of Lille an English aeroplane was shot down.

The communiqué of May 12th says:—

Hostile aviators yesterday bombarded Bruges without causing military damage.

East of Dixmude we shot down an English aeroplane.

The communiqué of May 17th says:—

Our airships made successful attacks on the war ports of Dover and Calais.

Dutch reports state that on May 8th an aeroplane appeared over Treves. A heavy fire was directed against it. It was afterwards found that the aeroplane was a Taube, with two German officers. The aeroplane was hit by a bullet.

The "Times" of the 14th says:—

"The Tirpitz Press Bureau publishes in all the German newspapers a cheerful, and, indeed, boastful article on the activity of German aircraft now that the spring has come. It is declared that the air fleet is now able to report 'daily'

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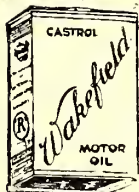
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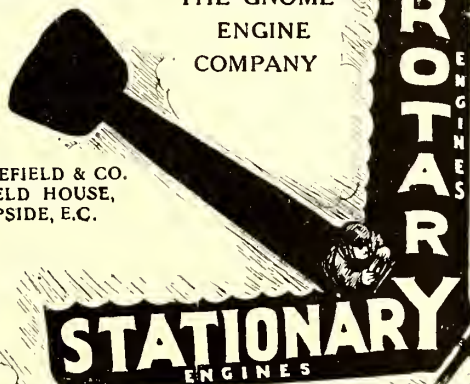
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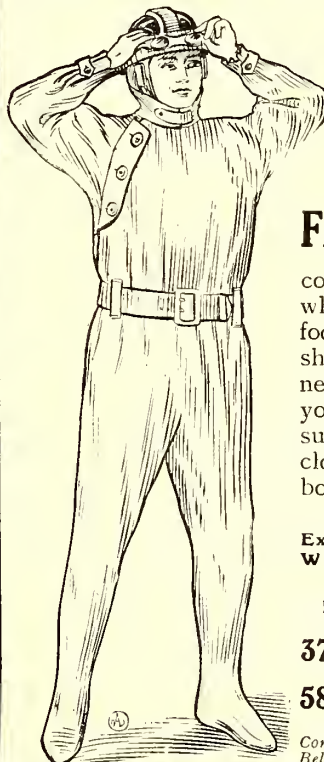


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upon the movements of enemy warships, 'although, indeed, there are none to be seen except destroyers and submarines,' upon the routes of English trading vessels, and upon the position of mine fields. There is said to be increasing co-operation between aircraft and submarines, and the latter 'recently have been able successfully to attack merchant ships and warships,' although attacks are difficult because every English ship is likely to be armed, so that the aircraft have to keep at a considerable height.—[All of which, except the statement that there are no British ships to be seen, seems very sound sense and agrees with what *THE AEROPLANE* has been saying for some time.—Ed.]

"After some kindly advice to neutrals either to paint their colours on their decks, as flags are difficult to distinguish, or to keep out of the war zone altogether—[which is also sound sense.—Ed.]—the article refers to air attacks on submarines. It is admitted that it is difficult to be sure of success, as the aircraft cannot know with certainty whether a submarine has been hit before it dives, but it is claimed that the losses of English submarines have been greater than has been admitted."—[Which is just what some of us would like to know who have seen the names of friends in the Submarine Service in the private obituary columns, and not in the Casualty Lists.—Ed.]

#### BELGIUM.

It was reported from Amsterdam on May 17 that the same morning a Zeppelin was pursued by a French aeroplane between Bruges and Heyst. The Frenchman was fired at, and was obliged to give up the pursuit, and the Zeppelin escaped.

#### TURKEY.

A Turkish newspaper, published in French, in an official account of the sinking of the E.15 says:—

"Enemy aeroplanes, on learning of the mishap to the E.15, flew over the Straits searching for the vessel. They threw bombs on the piles resembling periscopes which had been placed in the sea to deceive our opponents, and which they imagined might belong to the submarine. The object was, of course, to prevent the submarine from falling into our hands."

[A highly ingenious device those piles, almost as much so as the floating mines with dummy periscopes, devised by the Germans as bait for enthusiastic naval officers.—Ed.]

#### MONTENEGRO.

The official note issued in Cetinje on May 15th says:—

An Austrian aeroplane flew over the Montenegrin positions on Mount Lovtchen and threw six bombs without doing any damage.

#### INDIA.

From the "Week by Week" column of "The Englishman: Weekly Summary" (Calcutta, April 15th):—"Amongst the

items of expenditure in the United Provinces in 1913-1914 objected to by the Comptroller and Auditor-General was Rs. 21,000, 'the purchase of an aeroplane on behalf of a Maharaja.'"

#### AUSTRALIA.

Captain Penfold writes to say that an Italian aviator—a Count—has just arrived in Sydney with a Farman biplane.

The Australian Press makes no secret of the approaching departure of Captain Petre and Mr. Delfosse Badgery to India.

Mr. Badgery's 45-h.p. Caudron type biplane has been bought by the Australian Government, which is taking measures for the registration of all indigenous aircraft.

#### CANADA.

From the "Montreal Daily Star," April 22nd:—Ottawa, April 22nd.—Mr. J. A. D. MacCurdy, the Canadian aviator, who, with Capt. Janney, is the director of the Military Aviation School in Toronto, was in Ottawa yesterday conferring with officers of the Naval services through which recruits will be enlisted. Work is to be started at once and there are over 100 applicants so far.

Mr. MacCurdy will carry out the instructional work for the operations of both aeroplanes and hydroplanes (sic) at Toronto Island. He is authorised by the British Aero Club (sic) under whose direction the school is to issue certificates of qualification.

#### U. S. A.

From the "Globe," Toronto, April 26th:—Pensacola, Fla., April 28th.—A new world's record altitude flight was made here last Friday by Lieut. L. Bellinger at the Naval Aeronautical Station. A height of 10,000 ft. was reached.

[Presumably on a seaplane.—Ed.]

\* \* \*

It is reported that the U.S. Navy is organising a flying school at Pensacola, Florida, on healthy lines. The first course will include ten officers and twenty enlisted men.

The course of instruction for officers at the aviation school is to include six weeks at the manufacturing works of an aeroplane concern, after which the actual instruction in flying begins at the Pensacola aeronautic station.

As regards pay, as soon as they begin their practice work at the station the officers receive an increase of 35 per cent. in their pay. The men have 50 per cent. of their pay added on at the same time.

A further increase of 50 per cent. will be given to officers on taking their certificates.

The Navy now has four aeroplanes at the Pensacola aviation school for the training of officers and men. Two more machines have been ordered, and within a short time three more will be ordered, bringing the total quota up to nine machines.



COMING ASHORE.—One of the R.N.A.S. Coast Defence Seaplanes, a Sopwith, coming in. The landing crew have to wait in the water to prevent the floats from being damaged on the beach—which is one reason why the R.N.A.S. Comforts Fund needs subscriptions.

**THE INVASIONS OF ENGLAND.**

Another invasion of England took place early on the morning of May 17th, when a Zeppelin dropped a number of bombs on Ramsgate at about 1.30 a.m.

It is alleged that a far-seeing policeman watched the ship off the coast from about midnight, though it is not stated how he saw it in the dark, for there was no moon.

The number of bombs dropped is variously estimated at between 30 and 50, mostly incendiary. The Bull and George Hotel was hit by a bomb which must have been of some size, for it penetrated through the roof and three floors to the basement. It is stated that a Mr. and Mrs. Smith, staying in the hotel, followed the bomb into the cellar from the second floor, and, somehow, escaped being killed, arriving, presumably, after the bomb had burst. Mrs. Smith was severely injured, but Mr. Smith was little damaged. Miss Moffatt, a barmaid, was also slightly hurt.

Another bomb blew down a wall at Albion Hill, and damaged a house. A butcher's shop, belonging to one appropriately named Britton, was also deteriorated. Smacks were hit in the harbour, and a sentry in one of the streets was injured by a bomb dropped at him for firing at the Zeppelin when directly over his head—always an unwise thing to do.

Doubtless, Ramsgate is considered a "fortress" within the meaning of the Act, owing to the quantity of "infantry" quartered there every summer, most of whom are engaged in building edifices of military significance along the foreshore.

It is also stated that the Zeppelin appeared over Margate at 1.30 a.m., so that either there were two Zeppelins along the coast, or the Margate clock was wrong, or the Zeppelin emulated Sir Boyle Roche's famous bird, or as the two places are several miles apart it must have been "some Zeppelin."

A Zeppelin was also seen over Deal at 2.5 p.m. No bombs were dropped at Deal or Margate.

Reports say that "the Zeppelin left concealed in the clouds," thus, apparently, emulating also the fabulous Oozley-bird of the Desert, which "disappears in a thick mist." It is to be assumed that the pursuing aeroplanes from Eastchurch and Westgate (vide Admiralty announcement in "Naval and Military Notes") were thus hindered in their chase like the "baffled pursuers" of the fable.

A pilot named Martin, who landed at Deal on Monday, stated that "several" members of the crew of the s.s. "Castle Bruce" saw "five" Zeppelins four miles off the North Foreland, dropping "sparks or lights." One seems to recall a saying about "All my eye and Betty Martin."

Inhabitants of Deal are said to have waited on the sea front for a return of the Zeppelin, and passed their time in "drinking tea and smoking cigarettes," presumably to keep them awake. It seems, therefore, that not even Zeppelin bombs a few miles away will "Wake up England."

A "Daily Mail" report from Rotterdam, Holland, says of the reception given by Naval aviators to the, or one of the, Zeppelins, on her return to the Continent, "In less than fifteen minutes they disabled the Zeppelin, which, amid several explosions, fell between Brussels and Ghent. All the crew of 'sixty' were killed." The geography books tell us that Holland is a low lying country, so one need not repose implicit faith even in the "Daily Mail's" tame Dutchman.

The South-Eastern and Chatham Railway advertises the East Kent Coast as "Caesar's Choice." Why not "Kaiser's Choice" while they were about it?

\* \* \*

The Dover correspondent of the "Morning Post" says that it is practically certain that two Zeppelins were engaged in the raid. It is estimated that between 30 and 40 bombs were thrown by one of the Zeppelins whilst practically stationary in the district, including St. Margaret's Bay. After hurling bombs in this district the airship proceeded towards Dover, but the heavy fire from the anti-aircraft batteries soon caused her to turn seawards. The sound of the bombs in the St. Margaret's district had awakened the people of Dover, and when the first shells, which were of "an illuminating character," were fired the airship was plainly visible.

This account says further:—

"The Zeppelin which had first come into view of the Dover

people broadside on, rapidly turned south-eastward, and headed for the Channel. It was then noticed that she had taken on a decided cant, with her nose pointing downwards as she passed out to sea, and the gunners believed that she had been struck and her steering gear damaged. It was unfortunate for the gunners that just at this time a mass of low-lying cloud blew in from the Channel, and formed an impenetrable cover for the airship."

[The downward "cant" was presumably caused by the Zeppelin diving for the cover of the "low-lying cloud." Seafaring people seem to think that because an airship is a ship it must maintain a level keel, so any variation of angle is taken to mean that the ship is out of control.—Ed.]

The same correspondent continues:—

"Early in the morning, before one o'clock, three very violent explosions, followed by a series of lesser explosions, or heavy gunfire, had been heard along the south-east Kent coast. The earlier impressions were that a naval action was proceeding in the Channel, but information subsequently received shows that Calais was apparently being very heavily bombed by Zeppelins at that time, as from the cliffs not only could the direction of the explosions be detected as across at Calais, but the weather was so clear that the flashes of the anti-aircraft guns at the French port as they fought the enemy airships could be seen from the cliffs at St. Margaret's, Kings-down, etc."

**IN THE HOUSE.**

On May 11th, during the discussion on the motion for the adjournment of the House, Lord Charles Beresford asked the Government to "stop their nonsense and do something definite." Unless something drastic were done he was convinced that when Zeppelins dropped incendiary bombs on London many of the Germans among us would set fire to the City in 20 or 30 different places. The people who were most dangerous were not barbers, but men of high social position.

[It is not very often that one feels inclined to agree with Lord Charles, but on this point he is quite sound. It is commonly believed that when an air raid is made in force on London an organised attempt will be made to blow up our underground mechanisms, such as the Tubes and District Railways, the water and gas mains, and sewers. A lot of unhappy, but formerly useful, and invariably efficient German waiters and barbers are not going to pull off a coup of this sort without the organisation and orders of men in "high social position" to tell them when and how. It is, of course, only right and proper to intern and deport, as kindly as possible, all those Germans who have been our very excellent servants in the past, but it would be far better to imprison those in high places.—Ed.]

\* \* \*

Sir G. Agnew (R., Salford, W.) asked the Solicitor-General whether his attention had been called to the fact that various newspapers gave a detailed account of the course followed by enemy airships when making a raid in this country, naming the towns and villages over which they passed; whether the official information showed that these reports were of assistance to the enemy; and, if so, would he take steps to put a stop to the publication of these reports.

Sir S. Buckmaster said that his attention had been called to the question raised. He had no official information as to whether the published reports had been of assistance to the enemy. It was obvious, however, that such accounts as had been published were liable to do much mischief, and steps had been taken to deal with the matter.

[An excellent exposure of the imbecility of Press and Press Bureau alike. At the time of the raid on Newcastle, a valued and intelligent correspondent in the district sent this paper an excellent map showing the course followed by the Zeppelin, exactly where its bombs fell, and all the important works it just missed, as well as the positions of other works, and of the various points at which aircraft are stationed. Not looking at the matter from a strictly military point of view it never occurred to him that any paper publishing such a map would merely be acting as the marker at the butts on a rifle range, and showing the Germans just the amount of their errors in navigation. Naturally the map was not published.]



Yet numerous daily papers, whose editors are supposed to have a working knowledge of most subjects, including common sense, proceeded to get maps of almost as much importance passed by the Censor.—Ed.]

\* \* \*

In the House of Commons on Monday, May 17th, Mr. Macnamara (Secretary to the Admiralty), replying to Mr. Pennefather (U, Liverpool, Kirkdale), stated that the Zeppelin which bombarded Southend on "Monday last" was first seen at 2.45 a.m. and last seen at 4.30 a.m. News of its arrival was received at the Admiralty in a few minutes, and a number of aeroplanes ascended from the air stations in the region affected. A thick bank of cloud baffled the pursuers.

Mr. Pennefather: "Are the coast lookouts in direct telephonic communication with the aerial base, or was delay caused through inability to get connection through the telephonic exchange?"

Mr. Macnamara asked for notice of the question.

[Some people do ask for such practical information and are not satisfied with pious platitudes.—Ed.]

### Safeguards.

Local authorities in London have received from the Commissioner of Police a letter in connection with the measures to be taken in the event of hostile attacks by air.

The Commissioner points out that if bombs are dropped on buildings the latter may collapse entirely, but they are more likely to remain in a shaken and dangerous condition, and, in that case, the occupants would be removed, and all traffic stopped in any thoroughfare adjacent to guard against the risk of walls collapsing on passers-by.

He therefore asks if the Borough Councils could supply the police with the tripods and poles ordinarily used for preventing traffic from entering roads which are under repair.

### An Abomination Before the Lord.

Reading between the lines of the Admiralty announcement on the latest Zeppelin attack, it would appear that the Zeppelin was hit by incendiary projectiles of one sort or another, as proved by the column of smoke that was seen to rise from the envelope. Without detailed knowledge of the circumstance of the moment, it is impossible to explain the seeming invulnerability of the raider, but by an effort of memory it is possible to look back on the days of one's boyhood, when one was persuaded with percussive eloquence in the school laboratory that it takes two persons to make a quarrel and at least two elements to procure chemical reaction. It seems therefore just within the bounds of possibility that a small shell of incendiary attributes might conceivably burst right in the interior of a hydrogen sac without igniting the gas. Of course, all high explosives contain sufficient oxygen for their own combustion, but it seems likely that there is none to spare for the hydrogen.

To the non-technical mind, therefore, it would seem necessary that the anti-aircraft projectile should provide the oxygen wherewith to start the hydrogen fire. The shock of even a local explosion within the immediate vicinity of the projectile should be enough to shatter the envelopes of the airship sufficiently to admit an adequate supply of atmospheric air to complete the combustion.

As every German schoolboy knows, an intimate mixture of powdered potassium chlorate and manganese dioxide in proportions of 3—1 will emit large volumes of pure oxygen on the application of but moderate heat. Remembering this, it does not require an abnormal brain to imagine a bomb of fair dimensions, with quite thin walls, containing a moderate charge of bursting T.N.T. or cordite, a copious supply of the chlorate mixture so arranged that the heat of the explosion will release the oxygen, and last but not least a self-burning fuse to ensure ignition as soon as an explosive mixture was formed. The official chemists are left to discover the flaws in the suggestion.

At any rate, it appears that such a mixture combining with hydrogen would form water, so that one conjures up visions of a Zeppelin attacked by aeroplanes disappearing, and those on the ground below being suddenly drenched by a heavy shower interspersed with 1,000 h.p. of motors and sundry German aeronauts.

### The "Times" and the Latest Zeppelin Threat.

In one of the most humorous, if unconsciously humorous, articles the war has produced, a correspondent of the "Times" described as "A Neutral," states that preparations are being made to inflict something like a November fog on London in June or thereabouts. According to this individual, the German pyrotechnists have devised a bomb, or bombs, "nebel-bomben," calculated to diffuse into a certain volume of atmosphere, not specifically stated, a fog-like cloud sufficiently dense to obscure the airship, from which the bomb or bombs are dropped, from the beams of the most powerful searchlights. It is also stated that the new invention can be used in daylight.

Without wishing to be unduly sceptical, a little reflection relegates these bombs to the obscurity of their own alleged fog, for there is a limit to the compressibility of every gas, so that whatever the composition of the obscuring gas may be, it is difficult to see how even half-a-dozen Zeppelins could carry sufficient material, in addition to their equipment of explosives, to permeate the 400 square kilometres ("20 kms. square") of area claimed by the intelligent informant of the "Times" correspondent.

It would appear that a cloud of smoke of the magnitude which a Zeppelin might reasonably be supposed to emit would form a most excellent reflecting target for a searchlight, and would provide quite a useful adjunct to artillery range-finding. Incidentally, the hydrogen in a Zeppelin weighs something like two tons, and as any sort of smoke-gas must be heavier than hydrogen two tons of such gas would perforce occupy considerably less volume than its parent Zeppelin; and, as the reserve lift of a modern Zeppelin, after allowing for crew and fuel, is only about two tons, it would take the machine all its time to lift its own compressed fog, even without any bombs.

It therefore seems likely that the "Times" correspondent has "had his leg pulled." The only really surprising thing is that a paper of the standing of the "Times" should have wasted the better part of a column of its valuable space on puffulent matter which one would expect to find only in the pages of a sensational Sunday journal. Possibly, the friendly "neutral" brought from Germany a sample of the gas, and so obscured the intelligence of the member of the staff whose duty it should be to discover these pseudo-scientific "haves."

### An Unofficial Dispatch.

The following letter purports to have come from an officer of the R.F.C. at the front, but there are good reasons to doubt its authenticity:—

"... You may be interested to hear of the event which led to my D.S.O., V.C., and V.H.C. I was sent for one morning by General Sir N—B—G—, who asked if I would kindly undertake a raid in the direction of the Zeppelin shed at X—. The morning was fine, and so I agreed. He gave me an assortment of new-laid bombs, and said I might take anyone I liked as passenger. He seemed rather surprised when I selected our Sergeant-Major, but I explained that if he could drop my bombs as skilfully as he dropped his h's the success of the expedition was assured. . . . We ascended amid great cheering from our men, which fortunately drowned the voice of the man with the megaphone, who was badly mispronouncing my name, and in due course reached our destination. The S.-M. dropped six of the bombs and my fountain-pen on the shed, which promptly burst into flames, and as it was then approaching the lunch-hour I turned homeward. On the way back the S.-M. drew my attention to a large body of German artillery concealed in a wood. I gave him permission to drop a couple of bombs which still remained in his basket, and the destruction which followed was appalling. He called out to me, 'Nice row they're making, Captain!' (By the way, I forgot to mention I was promoted again last week.) 'Reminds me of the old Bodega at 'ome.' In reply to my request for an explanation he answered, 'Whines from the wood, sir!' He added later that he had been reading the papers lately and was in favour of total explosion of all aliens. . . . We made a picturesque descent at headquarters, and I had a fine reception. . . . I have since heard a report that the Zeppelin shed turned out to be a large picture palace.—D. W. T."

**Aero-motors: In Kind and Construction.—(Continued)**

BY GEOFFREY de HOLDEN-STONE.

"Gorstrewth," said the flower-girl looking at the hundred-guinea dressing bag in Drew's window, "what sort of a disy is it wot needs all them tools to doss 'erself up wiv?"

My good reader, at every turn you will find that an aero-motor—any make—is just that breed of "disy" transmigrated into metal. Her manifold manicurings, tooth-brushings, curlings, pencillings and dossings-up generally each need some special tool that, if you be wise you will make beforehand, and keep by you. No less the magneto than any other adjustment. So get a short piece of aluminium rod, and mark it at exactly 11 millimetres from one end. This done, you may now proceed to set the position of the carbon brush; which done for one cylinder, gives the setting for all the rest. Taking then, for instance, No. 1, place the test rod in the ignition plug hole in the top of the cylinder with the left hand, and rotate the crank-shaft with your right, watching the inlet valve tappet-rod. You will see it stop moving, of course, as soon as the valve closes, and remain motionless during the whole of the subsequent instroke for the compression. You can either wait until the piston has pushed the aluminium test rod out some distance as it reaches the full upper dead point, and then turn the crank-shaft backwards until the rod sinks again to the 11 mm. nick—which is the book way—or else you may, more expeditiously, stop in the first instance as soon as the piston lifts the rod high enough to show the nick exactly flush with the cylinder head surface. At any rate, that is the position of full ignition advance.

At this point, then, the carbon brush should be just fully on the beginning of terminal No. 1. So, having loosened the two screws on the distributor so as to allow an oscillation of a few millimetres either way, take out the small screw at the back of the distributor—which keeps the supporting ball-race from moving sidewise or endwise—and pull forward the distributor so as to disengage the gear wheel with the intermediary spur of the distribution. Then, having re-engaged their teeth so as to correspond with the position of full advance, you may then set all the screws home.

On the other hand, the 9-cylinder Salmson, as previously

explained, has a four-spark-per-revolution magneto, which carries its own distributor. To time the ignition, however, you proceed exactly as for the 7-cylinder type up to determining the ignition point; but you have now to adjust the primary make-and-break, as well as the carbon of the secondary distributor, remembering always the firing order, 1, 3, 5, 7, 9, 2, 4, 6, 8.

It is, of course, some assistance that the wiring leads are all numbered and set into a ring before connecting them up to the magneto distributor; but their attachment comes last.

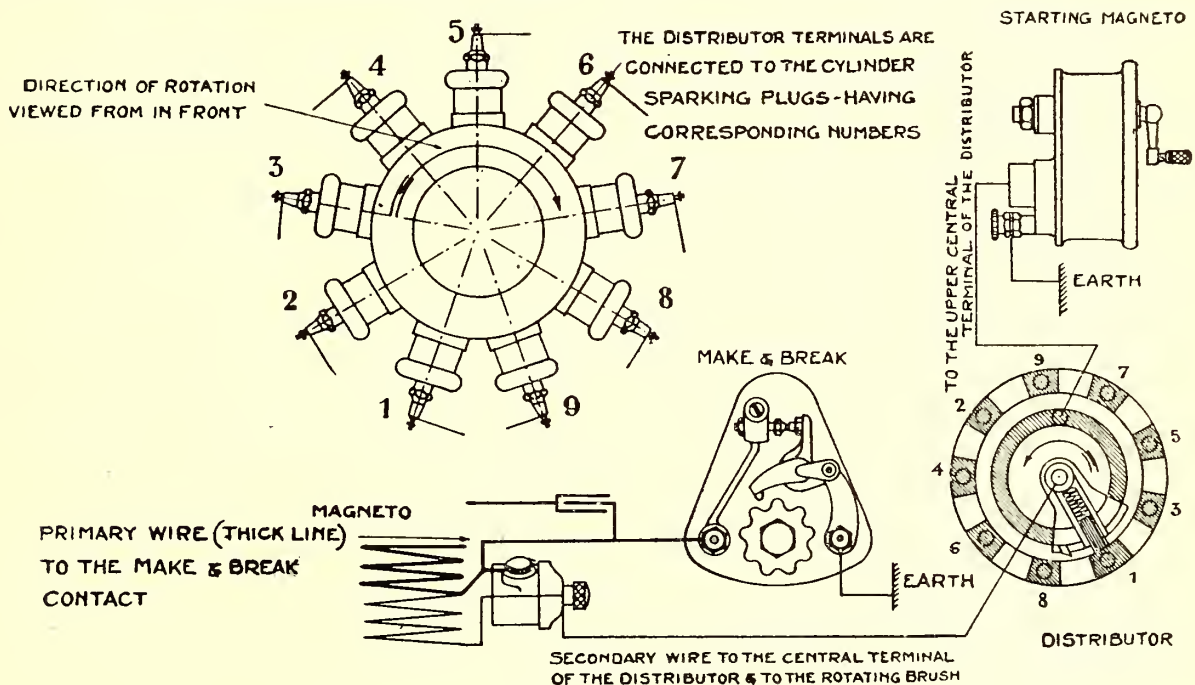
The first thing is to draw the magneto back so that its pinion is out of mesh with the drive. Then take off the cover of the primary distributor and shift the secondary one sufficiently to see exactly how the carbon brush relates at any moment to the fixed terminals.

Now rotate the magneto spindle from right to left—as seen from its front end—until the platinum screws of the primary make-and-break begin to move apart. Lock it in this position as best you can for the moment, and proceed to set the carbon brush full on the beginning—as before—of the fixed terminal for No. 1 cylinder. Wire up to the cylinder, and then set home all adjusting or set-screws.

You may now remesh the magneto-spindle gear with the driving pinion on the motor shaft, and having set home the attaching bolts, the adjustment is finished.

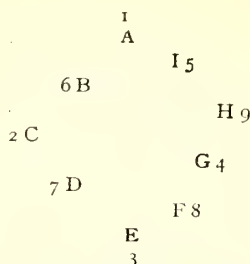
Having next replaced the cover of the primary make-and-break, the sparking plugs should be wiped clean—or, better, dipped in petrol and dried clean—set in their respective cylinders, and the remaining eight wirings can be connected up.

It is important to remember, however, that as the carbon-brush turns counter-clockwise—or from right to left—the wire numbers should likewise run in the same way from the terminals. Taking then the actual position of the cylinders in relation to one another, as A, B, C, etc.—A corresponding to No. 1—and the firing order as 1, 2, 3, etc., the diagram of the wiring up, as seen from the back of the motor, would be thus:



WIRING DISTRIBUTION ARRANGEMENT FOR MOTOR TYPE M9





That is to say, C, as No. 3 cylinder, would be the second to fire; E, as No. 5, the third; G, as No. 7, the fourth; I, as No. 9, the fifth; B, as No. 2, the sixth; D, as No. 4, the seventh; F, as No. 6, the eighth; and H, as No. 8, the last to fire.

See that the distance between the spark plug points is just  $4/10$  mm., and adjust the length of the wiring so that it is tight to the horseshoe in front of the motor.

The valve adjustment, thanks mainly to the roll-springs, is a simple affair enough. One has only to see that the valve seatings are well greased with vaseline before being screwed in, that the induction pipes make an airtight joint with the hoop, and that the security plates for both inlet and exhaust are duly in place, and one can go ahead with the setting. Turn the motor until any exhaust-valve is wide open, and then take the tappet of the corresponding inlet valve and twist it so as to give just a perceptible movement—a bare shake of about  $1/3$  of a millimetre—between the ball of the jumping-piece beneath and the head of the bell-like cup of the lower end of the rod. Then lock the nut on the rod. The exhaust-valve will then be treated in the same way, and so the valves, pair by pair, on each cylinder in turn. But, at the same time, see to it that all parts of the valve gear work freely prior to this final adjustment.

#### Installation of Motor

As has been already said, the motor can be installed in various ways, either by caging or by means of a plate fixed to the back. It can also be supported in front and rear—on the back supporting cover and on the distribution plate. Care must be taken to avoid any stresses between the front and the rear part—that is to say, the torque (twisting movement) of the motor must be entirely absorbed by the crankcase, and not by the distribution. The caging method avoids all this.

#### Oiling Arrangements.

Last of all, attach the lubrication piping. The diagram shows the lubrication system. It is better to make the diameter of the arrival piping rather larger than shown on the sketch. One of the most important points is to remember to place at the bottom of the main oil reservoir two very fine pieces of muslin, so as to prevent any dirt, brought up by the oil return pipe, from blocking the sights. The reservoir and sight feeds should be placed about 16 inches above the axis of the motor, and at a still higher level if the distance between them and the motor should be longer than usual. The lubrication detail on each motor is adjusted before it leaves the workshop. But if, owing to extremes of temperature or any other reason, any difficulties arise, the oil feed can be adjusted by means of the regulating screws of the double sight cup. The supply is lessened by unscrewing these screws.

#### Water Circulation

The necessary cooling surface depends largely on the type of radiator employed, and on the designed speed of the aeroplane. For a radiator composed of flat tubes at a distance of 10 mm. from one another, about 5 square metres (53.5 sq. ft.) of radiating surface is necessary for the 7-cylinder motor, and  $6\frac{1}{2}$  square metres (70 sq. ft.) for the 9-cylinder type. Should the propeller be situated behind the radiator, about  $1\frac{1}{2}$  square metres (16.1 sq. ft.) should be added to these figures.

The connecting piping is composed of tubes about 30 mm. internal diameter. It is extremely important to arrange a small short-circuit tube between the pump suction and the top outward flow pipe of the motor. The object of this small tube is to prevent the action of the pump stopping because of any

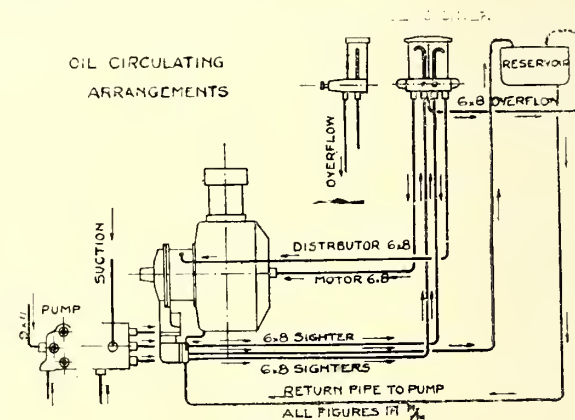
air or steam pockets in the upper parts of the piping. It is also desirable to have a small head of water above the level of the topmost cylinder.

Should the radiators be placed beneath the level of the motor—they never should be, but you must always be prepared to counteract freak aeroplane design—a small feed-tank containing a little over half a gallon should be placed in the outflow pipe—the return water lead—from the motor. Use the lightest tubing consistent with adequate strength, with long rubber attachments to damp any cylinder vibrations. Always keep the grease-cup on the pump full; constantly see to the clips, and once in a fortnight or so look to the packing glands of the pump.

As to the carburettor, one may fit any kind that the Salmson motor happens to like, though a Zenith is the one generally used, I believe. My personal advice, however, is to so install it that a sleeve throttle may be used instead of the inefficient butterfly, as not only can more positive control be obtained, but far better regulation of the mixture, especially if combined with an air-setting sleeve. Also, see that the petrol-tank is properly fitted with filters and placed at least a foot above the level of the carburettor.

#### Starting Arrangements. Starting by Propeller Swinging.

First see that the magneto contact is out of circuit. In the case of the 7-cylinder motor with a separate H.T. distributor, the mechanic who is going to swing the propeller should see that the distributor is also out of circuit. Next pump a little petrol into the induction hoop with the small hand-pump at one side of the aeroplane, or squirt it directly into the cylinders through the exhaust-valves with a syringe. Then slightly open the throttle corresponding to a speed of about 500 r.p.m., and let the mechanic pull the motor over two or three times to draw the mixture into the cylinders and compress it. Then cut in the distributor, and slightly retard the magneto at the same time. Let the mechanic then twist the propeller close to the hub over at least two compressions.



#### Handle Starting.

In this case the motor is always fitted with a special starting magneto.

Here we may have two different installations. Either the starting magneto is controlled by the starting handle, or, alternatively, it is independent. In this latter case you will find it close to your hand.

In either case, petrol is injected as before, and the throttle slightly opened.

If the starting magneto is controlled by the starting handle you take care to cut out the principal magneto, so as to avoid possible back-firing; then turn the handle until explosions begin. At this instant cut the principal magneto into circuit at full advance.

On the other hand, if the starting magneto is independent, give the starting handle a few turns so as to draw mixture into the cylinders—but with the main magneto cut out. The hand magneto can then be turned so as to fire the compressed mixture.

### Starting with Compressed Air.

As in the previous cases, petrol is first injected and the throttle slightly opened. The principal magneto is slightly retarded and cut in. The air-cock on the compressed-air bottle is opened with a blow of the palm of the hand, and the starting valve lever is also momentarily opened.

However, do not forget that it is useless to attempt to rotate the motor for any length of time by the compressed air; the sole object of which is to give an impulse to the motor, so that explosions will only occur when the compressed air has been cut off.

### Mounting of the Compressed Air Starter.

The compressed-air starting system consists essentially of a bottle of compressed air at about 125 kilos. (about 2,000 lbs. per sq. in.); a starting valve, and an air distributor with as many valves as there are cylinders. The latter is formed by a plate, turning at half the motor speed, which plate opens and closes the ends of the pipes which lead in to the cylinders.

You adjust the device thus:—Place the piston of any one cylinder at a distance of 1 to 2 mm. after its dead point (upper) at the beginning of the explosion stroke. That is, the point at which the air should begin to enter the cylinder. The direction of rotation of the distributor is from right to left, seen from the back; and on looking at it through the joint the gear wheel should be placed so that the light is just beginning to show through. The piping can then be placed in position, and in the same direction as the secondary wiring of the distributor, namely, 1, 3, 5, 7, 9, 2, 4, 6, 8.

The compressed air enters from the side of the small steel box, which is attached near the starting handle, and contains the distribution holes.

### A Few Points to be Remembered.

If the motor be cold it may be difficult to start, owing to slight water condensation on the sparking plugs. Unscrew these then, clean them with petrol, and make certain that the spark gap between the electrodes is correct. See the magneto is set to maximum advance. It is also a good plan to run the motor as best you can for a few seconds, so as to warm up

generally. If the mis-firing persists, it may be due to the following causes:—

The ignition may be at fault: but still see that the more obvious externals are in condition before taking it down. For a start, see that there is no air leakage either in the induction pipes or under the seats of the inlet valves. If all piping is found to be in order, make sure that none of the valve-gear details are sticking and preventing the valves from closing sufficiently rapidly. If free air is entering any cylinder, that cylinder will not fire at all; but should a valve stick, the cylinder gives two or three explosions from time to time, and then stops firing. It is easy to detect misfires, due to cold or to some slight fault in the carburettor. It is a good plan always to protect the carburettor from the wind with a metal shield and also to protect the reheater tubes.

In any case, after the motor has been in use a short time make sure that the valve springs are all in order, and the valves coming down fairly and firmly onto their seats, as even roller springs, like tram conductors, tend to lose their elasticity after a lengthy period of working.

However, if all the externals are in order, look for the trouble in the ignition. The platinum screw of the make-and-break may be stiff. Take it out and relieve the hammer by lightly boring out the fibre, and then replace it.

Whilst running, the magneto should be placed in its position of maximum advance, and left in that position; when shutting down, cut out the ignition before the throttle, so as to obtain an instantaneous stoppage of the motor.

### To be Noted in Testing.

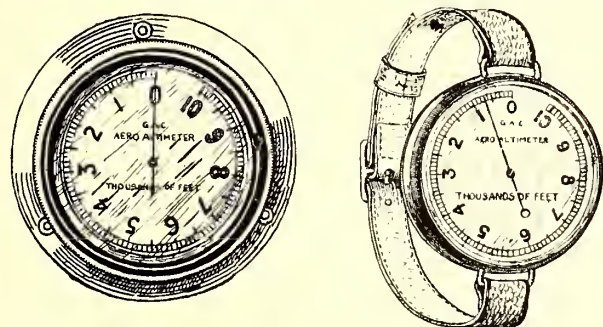
Finally, remember that oil on the distributor must be guarded against. The presence of oil will cause several cylinders to misfire, so the surface should be wiped clean and dry.

Also, that dirt or water in the carburettor has the effect of causing misfiring.

But do not alter the carburettor jets, as these have been carefully selected and gauged for their work by men who probably know as much as you do about carburettor conjuring.

## "FEATHER-WEIGHT" CHAMPIONS.

To estimate correctly one's height from the ground is beyond the powers of most aviators, even when atmospheric conditions are favourable, and when they are not favourable it is impossible. An instrument which will record the exact height under all conditions is, therefore, necessary. As necessary, in fact—as a frivolous pilot recently remarked—as a revolution indicator to a Mexican. With the progress of aviation it was inevitable that new instruments would be evolved, and an AEROPLANE representative has had an opportunity of inspecting a number of Aero Altimeters of various designs placed on the



market by the General Aeronautical Co., Ltd., of 30, Regent Street, S.W., the appropriate trade-mark being the name "Feather-weight."

Several features characterise the whole series, the first and most important being accuracy. These instruments, which are all made in London, are constructed with the most scientific care, and are thoroughly tested before leaving the works. No pilot wants an altimeter which assures him he is 5,000 ft. above trench-level when he is only 3,000 ft. up and within point-blank range of a well-managed anti-aircraft gun. Anyhow,

no pilot would expect anything bearing the sign of the "G.A.C." to be unreliable, and these instruments are not likely to damage the high reputation of the firm.

The second point is the remarkable lightness of the series. Neatly designed aluminium cases are chiefly responsible for this desirable feature. There is a "Miniature Pocket Type" of the size of a lady's watch, which weighs complete only 1½ oz. The diameter of the dial is 1½ in., and the thickness, if it can be so called, half an inch, and any aeroplane which hesitates about lifting this additional weight is only fit for a cinematograph melodrama.

The "Service Wristlet Model" is similar in size but is fitted with staples at the sides and a strap, and weighs complete 2 oz. There is an "Observer's Model" in a strong leather sling case, which will appeal to many on active service. The diameter of the aluminium case is 3 in. and of the dial 2½ in., the thickness ¾th in., and the weight without the leather fitting only 4½ oz. Another pocket type of similar dimensions has a dust-proof and water-tight aluminium cap to protect the dial. This model is specially suitable for balloon and airship use. The series of course includes altimeters with strong flange bases for screwing on to aeroplanes. These weigh 5 oz. each.

All the above models register up to 10,000 feet or 3,500 metres. The "Miniature Pocket Type" also gives barometric readings. The figures are particularly readable, and if desired luminous figures can be supplied if night flying is expected.

In early Victorian days, when evening parties were enlivened (or otherwise) with conundrums, someone started an inane query about mice spinning, the equally inane reply being, "Because the higher the fewer." After many years this remark is at last being endowed with some point, for any aviator with service experience when discussing the chances of being hit by shrapnel, will agree that "The higher the fewer." With this idea in mind the Aero Altimeters manufactured by the G.A.C. have the figures on each dial marked in black up to 8,000 ft., and above that mark, which is at



present recognised as somewhere about the limit of accurate gun-fire, the figures are in red, by way of reminder to the probably busily-occupied pilot.

The excellence of these instruments requires no better testimonial than the fact that they are now being supplied to the Governments of Great Britain, France, Russia, Italy, Greece, Siam, and other countries. When one adds that the prices are most moderate one leaves little more to be said.

#### For Dope.

The British Aeroplane Varnish Co., Ltd., of 57, Fenchurch Street, E.C. wish it to be known that they have now registered the telegraphic address "Tetrafree, Newcastle-on-Tyne" for their head office, and "Tetrafree Fen. London" for their London Branch. The coined word is at once ingenious and easy to remember, for one has only to recall that Titanine Dope is free from Tetrachlorethane and other chlorine derivatives, so that anyone who wants good dope in a hurry has the telegraphic address perpetually in mind.

#### Flying in Comfort.

However efficient the aeroplane may be, the success of a reconnaissance flight depends entirely on the aviator. It is obvious that his personal comfort is of primary importance, and the question of suitable clothing is one which requires the most careful study. A capable pilot on a good machine is useless to his country in an emergency if he is too cold and stiff to carry out his programme.

Anderson, Anderson and Anderson, Ltd., of Charing Cross, and Queen Victoria Street, E.C., have a world-wide reputation for waterproof clothing. Sportsmen in many countries have for years been familiar with the goods bearing this much-emphasised name, and our own Navy uses a large quantity of their waterproof garments. They have now designed and placed on sale a new overall for aviators, and an inspection reveals many features which will appeal at once to all who travel by air. The garment is made of a strong waterproof twill, and is after the style of the suits made for use on submarines, destroyers and other fast sea-craft. It is, however, of a much lighter weight. It is drawn on over the ordinary clothes or uniform, boots being replaced outside the feet of

the garment. A "storm-front" buttons on the right shoulder, a comfortable collar protects the neck and throat, and there are wind-proof cuffs inside the outer sleeves, which in their turn are strapped round the wrists.

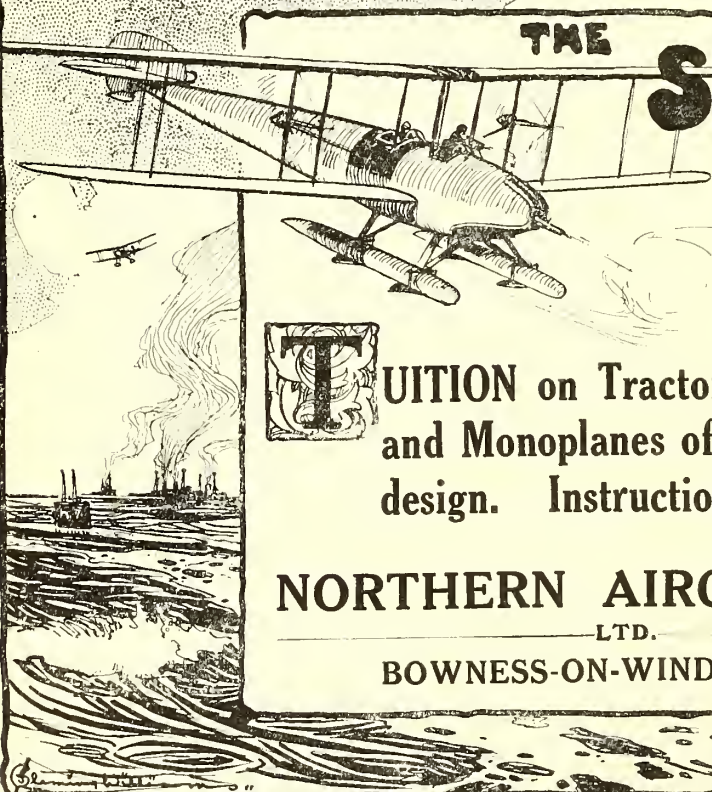
The fastenings are all perfectly simple, and equipped with one of these Anderson suits an aviator is completely protected against the wind. It would be particularly useful to sea-plane pilots and observers, who may have on occasion to wade in shallow waters. It can be packed up into a very small compass, and as the price is only three guineas there should be a brisk demand.—D. W. T.

#### The Week-end at Hendon.

The weather on Saturday was, for once, most suitable for flying, and a large number of flights were made. The first was by Mr. Baumann, who came out at 3 o'clock on the 60-h.p. Caudron. From then until dark exhibitions were constantly being given and numerous passengers were taken up, many of the latter, as usual, naval and military officers. The pilots were: Messrs. Roche-Kelly on a 50 Beatty-Wright, G. W. Beatty on a 60 Beatty-Wright, J. L. Hall on a 50 Caudron, Osipenko and Winter on 50 Grahame-White biplanes, and Warren and Virgilio on 45 Caudrons.

On Sunday it was practically calm all day, and the same pilots were out again with the exception of Mr. Hall. School work was going on from morning till night, being scarcely interrupted, if at all, by the exhibition flights which were numerous during the afternoon. The attendance was only moderately good considering the excellent weather, but this was probably accounted for by the nearness of the Whitsun holidays, when special attractions are being arranged.

The management of the London Aerodrome are making every effort to ensure that the Whitsun flying shall be as plentiful and entertaining as possible under war conditions. It is too early to do more than hint at the week-end programme, but one of the features will probably be an Inter-School contest, in which teams from the different flying schools will take part. The aerodrome will be open to the public on Saturday, Sunday and Monday.

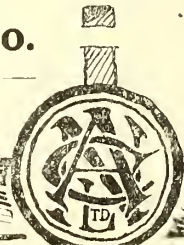


## THE SEAPLANE SCHOOL

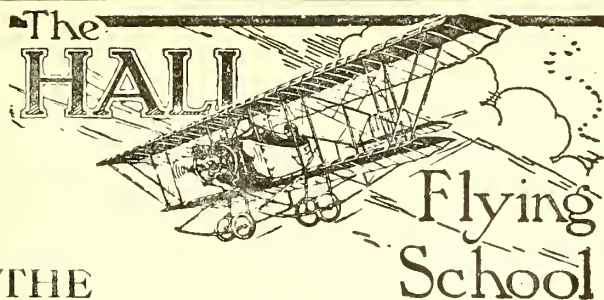
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### School and Weather Reports.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
Hendon ...	Fine	Fine	Fine	Rain	Fine	Fine	Fine
East Coast ...	Fine	Fine	Fine a.m. Wet p.m.	Wet	Fine	Fine	Fine
South Coast ...	Fine	Fine	Fine	Rain	Fine	Fine Show'y	Fine
Lake District	Fine	Fine	Windy	Windy	Fine	Fine	Fine

**Hendon.**—At THE GRAHAME-WHITE SCHOOL.—Instructors: Messrs. Russell and Winter. Pupils with instr.: Prob. Flt. Sub-Lieuts. Leigh, De Roeper, De Ville, Pennington, Simpson, Smylie and Wain. Pupil doing strts. alone: Prob. Flt. Sub-Lieut. Wain. Circs. with instr.: Prob. Flt. Sub-Lieut. Hood. Half-circs.: Prob. Flt. Sub-Lieut. Wain. 8's or circs. alone: Prob. Flt. Sub-Lieuts. Burling, Greer and Coleman. Landing practice: Prob. Flt. Sub-Lieuts. Coleman, Greer, Hood and Burling. Certificates were taken during the week by Prob. Flt. Sub-Lieuts. Coleman and Burling. Machines: Grahame-White biplanes.

At THE LONDON AND PROVINCIAL AVIATION CO.'S SCHOOL.—Instructors for the week: Messrs. Warren and Smiles.

Pupil with instructor: Mr. Turner.

Pupils doing straights or rolling alone: Messrs. Allen, Tranchomme, Bell, Irwing, Turner, and Redgrave Gummer. Pupils doing 8's or circuits: Messrs. Allen and Deschamps.

Mr. Deschamps took a good ticket on Tuesday morning.

Machines: 3 L. and P. biplanes.

At THE BEATTY SCHOOL OF FLYING, LTD.—Instructors of the week: Messrs. G. W. Beatty, W. Roche-Kelly, C. B. Prodder, and Bransly Williams.

Pupils at work during week with instructor: Messrs. Allcock (55), Bright (25), Chalmers (30), Chapelle (22), Crossman (5), Crowe (27), de Meza (5), Fanning (10), Fitz Herbert (20), Fraser (90), Hay (63), Johnston (5), Roche (75), Summers (63), Tomlinson (10), Vickers (5), Whincup (8), Wiles (5), Wainwright (10), Hodgson (10), King (5), Jones (5), Davison (7), Eaton (7).

Certificates were taken during the week by Messrs. Allcock, Bright, Fraser, and Roche.

Machines in use: Beatty-Wright dual control and single-seater propeller biplanes and Caudron biplanes.

Exhibition flights were given on Saturday and Sunday by Messrs. Beatty and Roche-Kelly, and two passenger-flights were taken in the course of the week.

At THE HALL SCHOOL.—Last week the following work was accomplished:—On Tuesday morning Mr. Snook (14 mins.) and Mr. Hatchman (15). During the afternoon the following pupils received instruction, Messrs. Hamer (14), Booker (15), Millbourne (7), Mason (5), Cook (3), Bayley (4), Hatchman (4), Mitchell (6), and Lieut. Jowett (3). On Wednesday Mr. Hill made a number of good straights (20), Messrs. Furlong (8), Snook (19), Bayley (20), Millbourne (25). On Friday Mr. Hill out on No. 1 machine, making a number of good straights, and Lieut. Blythe, 6 good straights. Messrs. Cook (6), Snook (6), Furlong (4), Hamer (9), Snowdon (7), Bayley (6), Hatchman (10), Booker (8), and Snook (7). On Saturday Lieut. Blythe, 6 straight flights and 2 half-circuits, and Mr. Hill 4 straight flights and 3 half-circuits. Furlong, 6 straight flights, and Messrs. Mitchell (5), and Hamer (8) rolling. On Sunday Lieut. Blythe, 6 straight flights and 2 half-circuits, Hill 3 straight flights and 3 half-circuits, and Minot 4 straight flights. Lieut. Jowett rolling (16).

At THE RUFFY-BAUMANN SCHOOL.—Instructors: Messrs. Baumann, James, Virgilio, Ruffy and Winchester. Pupils. Mon.: Mr. Roobaert 8's (24 mins.), Mr. Hudson joined for 3 hours extra practice. Tues.: Messrs. Sykes (6), Jackson (6), England (6), Blandy (6), Cole (6) on 45 Caudron, Messrs. May with instructors on 60 Caudron. Wed.: Messrs. Cole (4), King (12); another pupil joined for extra practice on the 60 Caudron. Frid.: Messrs. Sykes (6), Cole (8), Blandy (2) on the 45 Caudron. Sat.: Good day's work, all pupils much practice. Sun.: Many passengers carried and considerable practice accomplished by all pupils. Certificate taken by M. Roobaert (Belgian) on Tuesday at good altitude. He has now returned to Belgium for war service. Mr. Jackson



ticket also on Tuesday. Machines: 60-h.p. Caudron, 50-h.p. Caudron and 45-h.p. Caudron. On Monday passengers were carried by M. Baumann, and on Sunday. Altogether a very excellent week for school and general work. Three more pupils ready for ticket and vacancies now for new pupils; apply Manager.

On Tuesday Mr. Virgilio made his first attempt on a Caudron, and within two hours appeared to have complete mastery of the machine. Before evening his acrobatics were attributed by spectators to a pilot of considerably more experience with the type. On Wednesday a party of twelve visitors arrived for the purpose of having flights. The wind-gauge registered between 25 and 35 miles per hour, and two of the party registered between 15 and 16 stone, but Mr. Baumann took the dozen up, one after the other, on the 60-h.p. Caudron.

**Windermere.**—At THE NORTHERN AIRCRAFT CO.'S SCHOOL.—Instrs.: Messrs. W. Rowland Ding, C. L. Pashley, and J. Lankester Parker. Pupils with instr. on machine: Flt Lt. L. L. Atherton (20 mins), Prob. Flt. Sub-Lts. R. M. Clifford (23), W. L. Graham (28), L. W. Hodges (31), J. D. Hume (18), C. Perrett (16), F. R. Laver (18), Messrs. C. A. Barber (16), W. Laidler (15), N. K. Lawton (59), D. S. C. Macaskie (54), F. H. M. Macintyre (9), G. M. Part (9), H. P. Reid (9), H. Robinson (38), G. L. Railton (77), J. F. Ridgway (12), S. J. Sibley (27), H. Slingsby (15), E. R. Yates (57). Pupils doing strts.: Flt. Lt. L. L. Atherton, Messrs. H. Slingsby, G. L. Railton, H. P. Reid. 8's or circs.: R. Buck, out for ticket, but rising wind prevented continuance. Machines: N.A.C. Avro tractor, dual control, 50 Gnome, N.A.C. propeller monoplane, 80 Gnome.

Messrs. Ding, Pashley and Parker out testing or giving demonstration flights. Mr. C. Fleming Williams delivered an illustrated technical lecture on "Internal Combustion Engines," after which students were conducted round the works and shown the various applications of theoretical findings.

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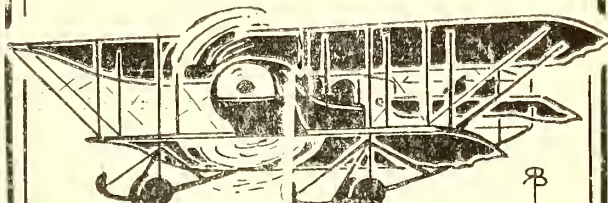
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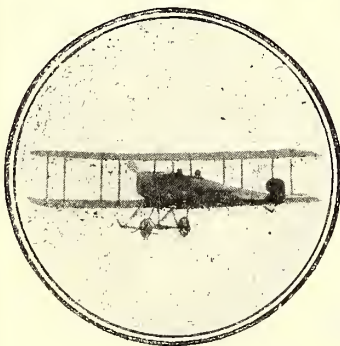
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"THE AEROPLANE," May 26, 1915.

# THE AEROPLANE

12  
WEEKLY

Edited by C. G. GREY. ("Aero-Amateur")

VOL. VIII. [REGISTERED AT THE G.P.O.  
AS A NEWSPAPER.] WEDNESDAY, MAY 26, 1915.

No. 21

## SOME NEW PILOTS.



Photographs by F. N. Birkett, 97, Percy Road, Shepherd's Bush, W.

Top Row. Left to Right:—Prob. Flight Sub-Lieut. J. F. Potts, R.N.A.S. (Grahame-White School), Certificate 1188; Mr. R. W. Kenworthy (Beatty School), Certificate 1222; Prob. Flt. Sub-Lieut. H. S. Kerby, R.N.A.S. (Grahame-White School), Certificate 1214.

Lower Row. Left to Right:—Mr. J. F. Stevens (Hall School), Certificate 1024 (now acting as instructor at the Hall School); Mr. P. C. Cooper (Beatty School), Certificate 1208; Prob. Flt. Sub-Lieut. A. F. F. Jacob (Grahame-White School), Certificate 1200; Sergt. Leslie Haydon, R.F.C. (Ruffy-Baumann School), Certificate 1173.



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## On Cabinet Making.

Cabinet-making seems to be the leading industry of the British Empire at the moment. I do not mean that kind of cabinet-making which has merely produced a trade union which interferes with the production of aircraft, but the still more serious kind which interferes with the efficiency of the whole of the King's Armed Forces. Assassination by newspaper is perhaps less harmful to the immediate victim than is assassination by more primitive methods, but it is more costly to the nation, in that it destroys confidence in the Nation's leaders, and holds up supplies for those who are risking their lives in the Nation's service more effectually than if the Cabinet went on strike.

Whether the Secretary of State for War is being assassinated by the Harmsworth Press or whether the First Lord of the Admiralty is being assassinated by the Bathurst-Beresford Press it means that the men in the trenches and the men at sea suffer for it. It means that none of "Kitchener's men" at the War Office and none of "Churchill's men" at the Admiralty will commit themselves to anything definite till it is settled whether their "chief" is to go or not, and whether they themselves are to be pitched out after him or are to be promoted for sticking to him in his time of trouble. Consequently, new contracts for armament, new schemes for the defeat of Germany, new appointments to important commands, and so forth, are hung up till a lot of press-men and politicians have finished vomiting ink and hot air over their betters.

Without considering the rights or wrongs of the question one cannot help seeing that simple sudden death would have been cheaper for the nation, in that if a man is merely dead someone else takes his place at once, whereas if he and all his retainers are in a state of suspended animation time and money are wasted. Mark you, I am merely regarding the economic side of the question, for I am fully convinced that any absolute change in control at the War Office and Admiralty cannot be for the better, and we shall be jolly lucky if it is not for the worse.

### The War Office Trouble.

Granted that Lord Kitchener is not all that he was "cracked up to be"—seeing that he is only a human being and not a superman—can anyone find a better head? Some egregious ass has suggested that K. should leave the organisation side to Mr. Lloyd George and that he should himself take command in the field. I fancy most soldiers would rather see the process reversed.

K. of K. is a Sapper, also he is a proved and Heaven-sent organiser, but he is not what Brother Boer calls a "Fecht General"—ask any officer who was at Paardeburg, the only time K. ever commanded on the field of battle. K. may not be the organiser that he was fifteen years ago, and there may be better organisers in the Army to-day, but this is not the time for experiments in organisation any more than it is the time for experiments in new types of aircraft when we want every engine and every stick of timber for machines of proved effectiveness.

Mr. Lloyd George, on the other hand, is a born "scrapper," which is the exact opposite to a "sapper,"

and he might quite conceivably be a Celtic Joshua sent for the salvation of the British Army—anyhow, his name is David, a sportsman whom he resembles in many of his characteristics. However, in either case, Sir John French's job does not seem in any particular jeopardy from the Political Cabinet-Makers' dis-Union.

### Kitchener on Aircraft.

So far as aircraft are concerned Lord Kitchener has been a good friend to the R.F.C. There is a legend that many months ago he sent to a certain department at the War Office asking how many squadrons of aeroplanes could be raised in a certain time. The officer to whom the question was put (being of a sanguine temperament) sent back a memorandum naming a figure which would, by its vastness, have staggered the inept retail mind of a mere Seely. The memorandum promptly came back, and written on it in K.'s own hand was the simple instruction—"This figure must be doubled."

If that represents K.'s views on aeroplanes one can scarcely write him off as a back number. Possibly he is not the Strong Man for which we have been longing, but one doubts whether any man is strong enough to do what is wanted in this country at the moment, for that man must be a military dictator, who will defy all outside influences and be equally superior to the brewery interests, the armament ring, the American finance ring—which is messing up armament contracts abroad—the Cecil family, the Nonconformist conscience and its hangers-on, the teetotal fanatics, the Irish parties, and all the other little cliques and cabals which are hampering progress and wasting lives.

We want either a Napoleon or a Cromwell, and when he arrives I shall be pleased to throw up this job and serve him in any capacity, however humble. Meantime, if K. is neither, he is a good man at his job, within his limitations, and one cannot admire the Conservative Party for using his limitations as a lever by which to squeeze themselves into the Cabinet.

I am told, from the inside of things, that the Opposition Front Bench clique threatened that unless they were allowed to share power in the Cabinet they would force a debate on the Armament question, and expose K.'s alleged mistakes. Unfortunately, their "gaff" seems to have been "blown" by the Harmsworth Press, which may after all have done it on purpose to spike their guns. Anyhow, both parties are so hopelessly inept that it really matters very little which is in power or whether both dip out of the same pot, and share the plunder.

### Mr. Churchill.

Mr. Churchill's case concerns those connected with aviation even more intimately than does that of Lord Kitchener. Mr. Churchill has always been a young man in a hurry. Young men in hurries have made most of the mistakes in history, but they have also made most of the progress. Mr. Churchill took a long-odds gamble on capturing the Dardanelles with the Fleet alone. Many experienced sailors agreed with him in doing so. If he had won he would have been hailed as an Heaven-inspired genius. He failed, and so he is damned for a reckless fool by people who are



bigger fools without even the saving grace of recklessness. He was condemned over the Antwerp business on just as little justification.

It seems certain, in any case, that Mr. Churchill will leave the Admiralty. He will be mourned very sincerely by the majority of sailors, for his bull-at-a-gate methods, mixed as they were with a high degree of sportsmanship and mental activity, are precisely such as appeal to most sailors, for in every sailor worth his salt a touch of the pirate survives, even as the wolf persists in every dog.

Not only the R.N.A.S. but the R.F.C. owe their present supply of aeroplanes to Mr. Churchill, for without his backing the Air Department at the Admiralty could not have ordered aeroplanes as it did, and several firms would have been "broke" which have since supplied both the Navy and Army with their most efficient and most effective aeroplanes which have enabled both Services to acquire and maintain that "personal ascendency" over German aviators which has been so largely used for advertising purposes by those hostile to the aeroplane industry.

#### **Mr. Churchill's Influence.**

Moreover, by taking to flying himself, Mr. Churchill influenced many of those in high places, and thereby spread confidence in the future of aircraft among people who would never have believed in it if their knowledge had been derived solely from watching or reading of the performances of aerial acrobats.

It would, therefore, be almost a calamity for aviation in general if Mr. Churchill were cut off from all connection with it. Fortunately, there is little fear of such a calamity, for he is too strong a man to let himself be "Stellenbosched."

There is talk of his going to the India Office. That would be certain to lead to trouble, for his methods are not such as would blend with the immovable East. One recalls Mr. Kipling's lines:—

"And the end of the fight is a tombstone white, with the name of the late deceased,  
"And the epitaph drear—'A fool lies here, who tried to hustle the East.'"

Mr. Churchill is not a fool, but the East would probably wear him down, and, anyhow, his energies would be wasted.

#### **A Chance for the Colonies.**

There is also a rumour that he may go to the Colonial Office. Here he would have greater prospects of success, for his hustling methods, derived, doubtless, from his American ancestry, would probably agree with those of other young men in a hurry on the outposts of the Empire. One cannot imagine him censuring a dead officer for being too venturesome, as occurred in that very unpleasant incident in the history of Somaliland last year. Moreover, his belief in aircraft would find justification in the Colonies, where there is greater scope for land and water aeroplanes than there is at home. At the Colonial Office one can see Mr. Churchill doing very great work for the Empire.

## **On What Might Have Been.**

Nothing has ever confirmed the soundness of the views set forth in this paper by various writers so well as the brief but highly important speech of the Assistant-Director of Military Aeronautics at the annual meeting of the Aeronautical Society on Thursday last. This officer, himself a pilot of ability and experience, speaking with intimate personal knowledge both of the past and present state of the aircraft industry and the uses of aeroplanes on active service, emphasised quality after quality as being necessary in military aeroplanes, all of which qualities have been preached in this paper as desirable during the last two or three, and, in some cases, almost four years.

In that period those men with whom I have had the good fortune to be associated on this paper and I my-

#### **A Command in the Field.**

Personally, however, I rather expect to see him do what it has long seemed his ambition to do, namely, to take an active part in the war. The Royal Naval Division at "H.M.S. Crystal Palace" and elsewhere has long been known in certain places as "Churchill's Army," and it is such just as the New Armies are "Kitchener's Army."

Nothing would be more in keeping with Mr. Churchill's temperament than that he should take command of that force, and of a corresponding detachment of R.N.A.S. aircraft, and wade into the war at some point where hard fighting and brave leadership can be effective. He is sufficiently a soldier to obey orders as part of a general scheme, so long as he can fight his own corner in his own fashion. And his corner would be worth watching. It would be an "all in" fight, without rules or formulæ, and it would result either in distinction or extinction for all concerned. There would be no half-measures about it. And, I fancy, most real fighting men would like to be in it.

#### **A Debt of Gratitude.**

In any case, the whole country owes Mr. Churchill a debt of gratitude, firstly, for his action in preserving and encouraging the supply of aeroplanes, and, secondly, for his mobilisation of the Fleet at Spithead in July. The "monkey-jacket Review" at which the R.N.A.S. made its first official appearance bottled the German Fleet and ensured our food supplies.

There is a legend that the hint to mobilise came from Italy, where someone discovered and told someone in England that the German Government had asked the Italian Government what course it would take in the event of England declaring war in alliance with France and Russia if Germany and Austria attacked Russia. The truth of that legend can only become known years hence, but one likes to believe it. Also, one likes to think that Italy would have joined us months ago if she had been sufficiently armed. Anyhow, America probably knows better than most people how much armament Italy has bought in the last ten months.

There is also a legend that the air of Italy is excellent for eye-strain when Cabinet Ministers are afflicted thereby. Italy is so far away when one wishes to view things at close quarters. But that is another story.

However, whatever course Mr. Churchill chooses to pursue, the Nation owes him much and wishes him well. There is a saying in the country round Blenheim that there was never a Churchill who was sane and never a Churchill who was a fool. Mr. Winston Churchill may not be sane according to the old respectable stupid English standard, the fact that he is interested in aircraft proves it, for no sane person would ever waste his time on aeroplanes when it is so much easier to make a fortune by selling butter or beer, or something that everybody wants. But he may rest assured that all of us other lunatics who have staked the work of our lives on aviation appreciate his high qualities.—C. G. G.

self have preached till we were sick of writing, and till many readers must have been sick of reading, of the need for British-built engines, of the superiority of aeroplanes of British design and construction—if given a fair chance—of the need for greater speed, of the absolute necessity for greater climbing and lifting power, of the desirability of inherently stable and yet controllable machines so that pilots of mediocre quality could be used with effect, thus leaving the highly skilled pilots free for special duties.

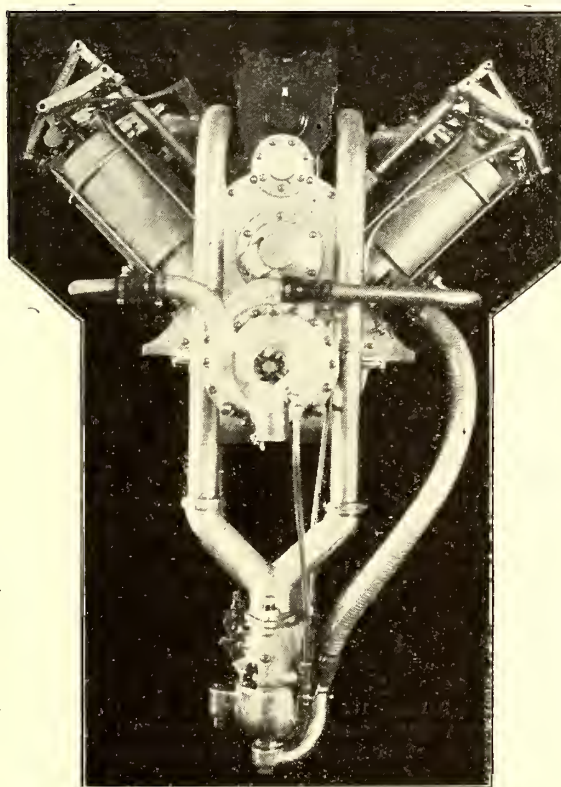
Many officers of the R.F.C. agreed whole-heartedly with our long fight for efficiency and effectiveness combined, for they, poor chaps, were the "toad beneath the harrow," who knew what was wanted. It is even possible that some senior officers sympathised

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Leading  
Governments.

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American records.

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years' experience in  
designing and  
building  
light-weight motors.



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8 cyl. 4 x 5 in.

100 h.p. "O-XX"  
8 cyl. 4½ x 5 in.

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8 cyl. 5 x 7 in.

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world when equipped  
with fuel and oil  
for 4 hours.

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**THE CURTISS MOTOR COMPANY,**  
**HAMMONDSPOUT, N.Y.**

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with our efforts, but were powerless to better the state of affairs which then existed. The opinions of the practical men, the men whose lives were risked every day in peace time on dangerous machines—which cost many of those lives—were overborne by the theories of pseudo-scientists who had their own axes to grind, and who were ready to sacrifice the lives of any number of simple soldiers until such time as they managed, by stealing the ideas of rival manufacturers, to produce something they could persuade the higher military authorities to believe to be at once their own, and worth using.

#### **Good Work by British Machines.**

When we were beseeching the War Office to support British aeroplane makers with orders, the technical advisers of the War Office were doing their best to prevent the R.F.C. from buying aeroplanes of independent design. Yet when war broke out what machines did the best work—not the most work, for there were few of them—but the best work in out-flying and out-climbing the German machines? The fastest single seaters were the Bristol "tabloids," and the fastest two-seaters were the Avros. They were the only machines used by the R.F.C. which could tackle the new German Aviatik and Albatros biplanes. Yet for six months and more before the war we had been ramming the capabilities of those German machines down the Government's throat, without result.

These British machines with 80-h.p. Gnômes had to beat the German machines with 110-h.p. Mercédès engines, and they did it successfully.

#### **What Engines We Might Have Had.**

Two years, at least, before the war, we begged for encouragement for British engines. The Green was the only engine made in this country which had proved its quality and reliability. One at least of the technical advisers of the War Office told the makers of that engine that they were strongly advising the R.F.C. to buy their engines, yet we learned from other sources that the engine was being officially condemned by certain of the said technical advisers. The reason was disclosed in this paper when we showed that some of these technical advisers were trying to produce an engine of their own. That engine has now appeared, and has given wonderful power for its weight—for a while—but it is still very far from proving its reliability. It still cracks cylinders, breaks valves, and does other foolish things. Yet, thanks to its designers'

"pull," it is being ordered in quantities from motor-car firms.

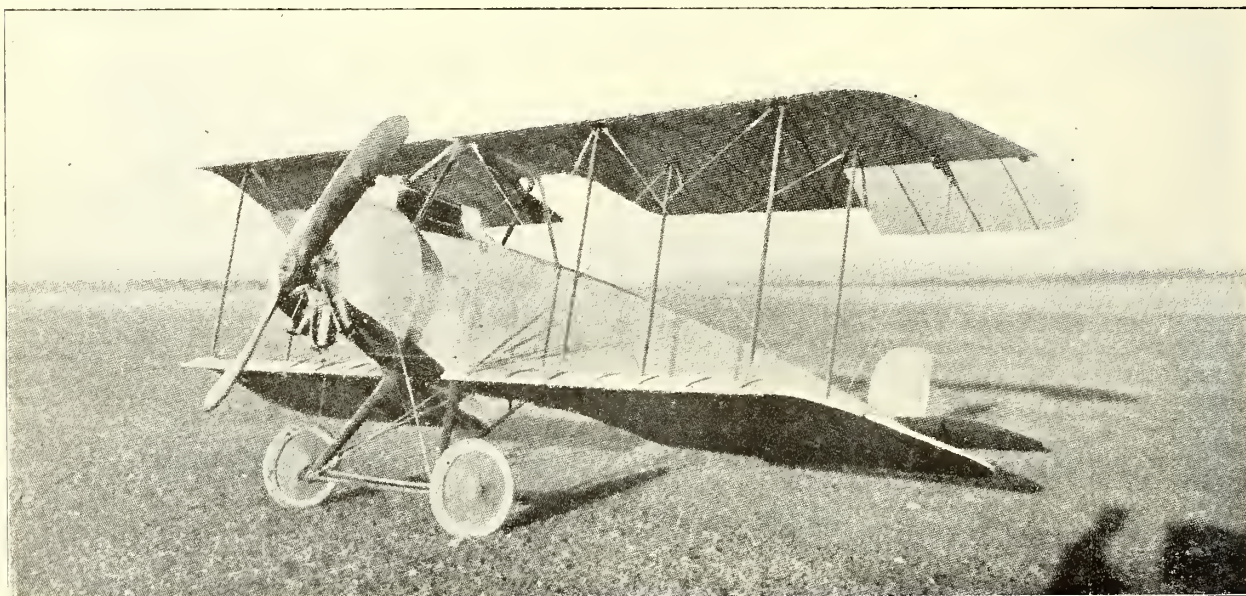
Meantime, when the Green Engine Company, refusing to be squeezed out of business, had gone to the expense of producing a 100-h.p. engine to compete with the Mercédès, and had won the Naval and Military Aero-Engine Competition handsomely, instead of building one of these engines into a big tractor biplane of the German type, which would be assured of success, or allowing these engines to be used by independent constructors for variants of their own successful types of tractor biplanes, the R.F.C.'s technical advisers deliberately "corner" the new Greens with the intention of using them on "pusher" biplanes of an obsolete type, which is merely a variant of the fatal F.E.2 doctored up with experience acquired apparently from the success of the Vickers gun-carrier with an absolutely different type of engine.

#### **The Multiple Engine Job.**

A year ago we on this paper drew attention over and over again to the possibilities of a dual-engine gun-carrier, with a fuselage instead of tail-booms. Dual, and even quadruple, engined machines have already been proved a reasonable proposition by Sikorski in Russia, and by the Caudron people in France, yet these precious technical advisers go on messing about with their obsolete tail-boom, single-engine "pushers," making them worse by fitting a big engine aft, which forces them to put the gun and gunner yards out in front of everything, and gives an enormous longitudinal moment of inertia, which needs a huge tail and elevator to control it.

Yet, if they had been gifted with even a gleam of common sense they could have made a dual-engine job which would have disposed their weights more compactly, or, at any rate, in better proportion to their surfaces, and would have given them speed and climb undreamt of in this country, so far as gun-carriers are concerned. And, by cornering the new Green engines for their own futile machines they prevent other designers with better brains from producing better machines.

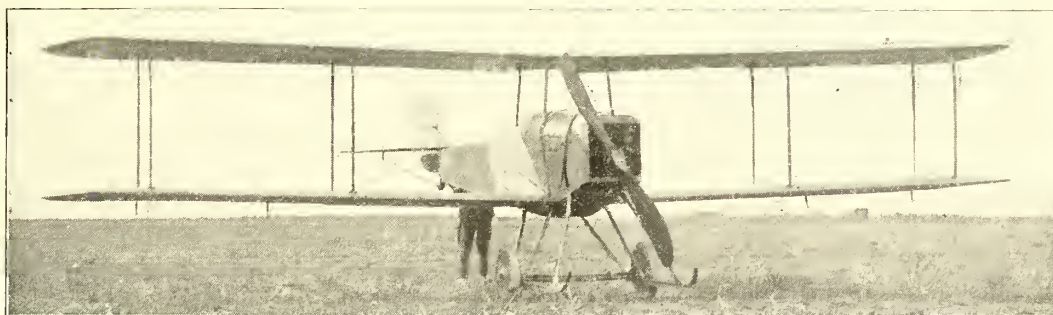
As the A.D.M.A. said, as the war goes on—and, incidentally, it is going on for a long time yet—the demand for speed, climb, and lift will become greater. If the R.F.C. had listened to practical advisers instead of technical advisers it could have had before the war all the speed, climb and lift it is now likely to want.



The Gotha "Falke" (Falcon) biplane with Oberursel (German Gnome) 100-h.p. motor. Germany's reply to our "tabloids."



## AEROPLANES



Front View of Military Two-Seater Tractor Biplane

On February 27th, at Ithaca, N.Y.,  
a Thomas Tractor 90 h.p. climbed

**4000 feet in 10 minutes,  
carrying 3 men and fuel  
for 4 hours' flying.**

SPEED VARIATION { 81.1 miles per hour Maximum  
38 miles per hour Minimum

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*The Thomas Tractor "showed a  
high degree of inherent stability."*

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**The Matter of Stability.**

In the matter of stable aeroplanes also the R.F.C. is months, if not years, behind where it might have been if it had listened to practical men. Stable aeroplanes have been made by small boys with bits of stick and paper for years. Practical men, if supported by orders, would have produced equally stable full-sized machines two years or more ago. They did not produce them simply because they had to build what people would buy, and lack of Government orders assured that they had no money with which to experiment. Nevertheless, quite a number of their machines came as near being inherently stable as no matter.

The technical advisers of the R.F.C. had the money, and how did they use it? They found out, thanks almost entirely to the late Mr. Busk, acting as a link between theory and practice, how to make an aeroplane which is very nearly if not quite stable. It is curious that while Mr. Busk was alive he was considered, if one may judge by his employers' pay-sheets, to be worth rather less than what a decent fitter can draw in any engineering shop to-day. Now the poor boy is dead, and his employers can extract some reflected glory from his halo, they pull various strings to get him canonised in the hierarchy of aeronautics by securing for his memory an award which ostensibly places him on a level with the late Wilbur Wright. Yet, the late Stanley Franklin Cody, the great pioneer of British aviation, had to be content with a silver medal, and Mr. A. V. Roe, whose pure genius has produced the most efficient aeroplane yet seen, who disputes with Cody the honour of being the first man to fly in England, and who was beyond dispute the first Englishman to fly, is never even suggested as a possible recipient of honours from our leading scientific body.

**Unintelligent Anticipation.**

However, having discovered one way of many of making a stable aeroplane, the R.F.C.'s technical advisers proceeded to design, on the strength of those discoveries, a machine to be driven by an apocryphal engine which does not even yet exist. The machine costs twice as much both in time and money to build as it need do. Any practical man could halve them both and make a better aeroplane. They foist it on to the unfortunate R.F.C. as a finished product. And then they fit into it an engine giving 30-h.p. less than that for which it was designed.

When I dared to criticise its performance, I was told that it was designed for bigger horse-power. What has that to do with the question? What we want is performance, not what might have been if things had not been different. The proper thing to have done was to have said—"We have not got our big engine. Let us make an aeroplane to suit the small one." Any one of half-a-dozen ordinary designers of my acquaintance could have produced such an aeroplane in six weeks, and the first of these "stable" aeroplanes takes any firm nearer six months to produce, thanks to complicated and errorful drawings, and absurd specifications of material and methods of assembly.

**To Prevent Misapprehension.**

An advertisement which appeared in the "Evening News" of the 19th inst. is somewhat liable to convey a wrong impression. In it a picture appeared of a French monoplane dropping bombs on a Zeppelin, and underneath there appears a quotation from the Admiralty report concerning the attack on a Zeppelin by pilots of the Royal Naval Air Service, on May 17th. This naturally causes the impression that the bombs in question were dropped from a monoplane of the make advertised. This paper is informed on the authority of an eye-witness of the event that the officer who was mentioned in the dispatch as dropping the bombs was, in fact, flying an Avro biplane.

A reader of *THE AEROPLANE*, now in the Army, who writes inquiring about the accuracy of this particular advertisement,

I preached stability long before anyone else in print, except, perhaps, Mr. José Weiss and his personal friends, so no one can accuse me of decrying stability as such, but when a pilot's choice lies between a stable aeroplane that will not climb, and a merely controllable one that will, most pilots will vote for climb at all costs. It is like the old argument about factors of safety, apropos which a certain pilot said, "What's the use of a factor of safety of 16 to 1 against your breaking your neck if it means that you've got to have a factor of 10 to 1 in favour of getting a bullet in the chest of your trousers?"

**How to Get Climb and Safety.**

It never seems to have struck the Government's stipendiary geniuses that it may pay to build a machine simply to climb, leaving speed out of the question, and to keep a little flock of such machines, well armed, cruising about at a height of 10,000 feet or so to protect the reconnaissance machines below from attack from the faster-climbing Germans.

Such machines could be easily and quickly built on the Caudron principle, and by fitting two old type 50-h.p. Gnômes—of which there are plenty in France—they need not interfere with the supply of the newer types which are now coming out with bigger engines. Or a couple of 45-h.p. Anzani's would probably do as well. The gun would then go where the engine is now. Such a machine could be built in six weeks or less.

Of course, no one will bother about the suggestion. It will be passed over like all the other preaching this paper has done, till it is too late to be of any use, or till the enemy has appropriated the idea.

**A Serious Position.**

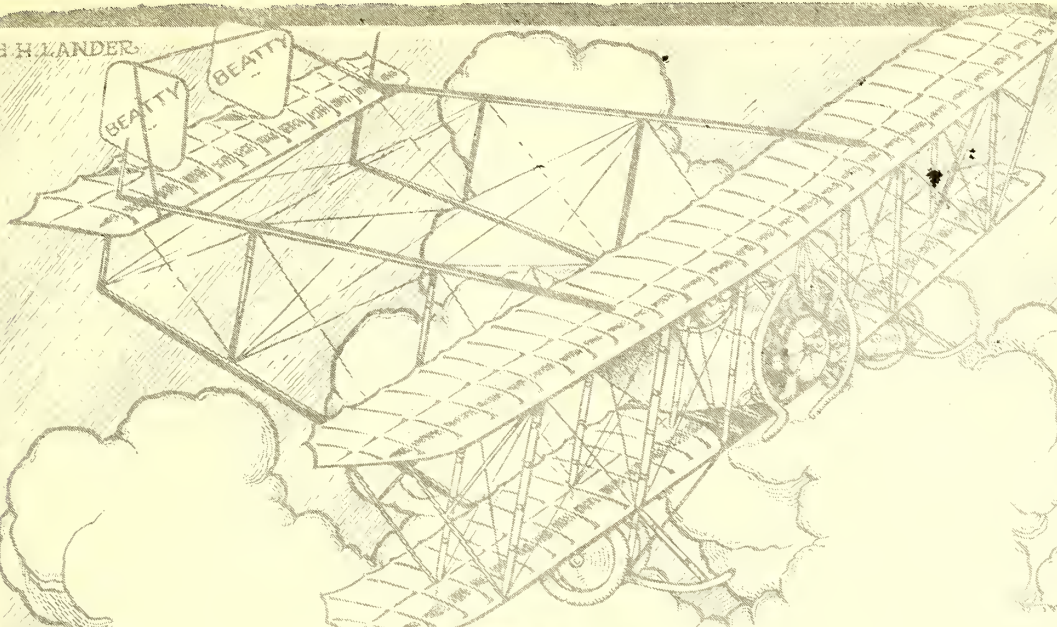
The A.D.M.A.'s speech shows, if one reads below its surface optimism, a very serious state of affairs. Of course, the R.F.C. is only a very small part of the Army, and its troubles are as nothing to the troubles of the Army as a whole. Our lack of engines is, perhaps, not as important at the gunners' lack of H.E. shells, and so on, down the line. And, doubtless, all the other troubles might have been avoided if those in authority had had the sense to listen to their various prophets of evil. Only, so far as the R.F.C. is concerned, it is of more immediate interest to readers of this paper.

All the trouble can be traced back to the scheming, self-seeking machinations of the technical advisers of the War Office. The R.F.C. can blame them for lack of British engines, lack of British magnetos, lack of speed, climb, lift, quantity, quality, and everything else. It can blame itself for not kicking harder for what it wanted. It can blame the egregious Seely for being a fool. It can blame the late Master-General of the Ordnance for being asleep. It can blame public and official apathy. Only it cannot blame me and my assistants on this paper, because for years we have been begging for just what the R.F.C. wants to-day, and cannot get. All we can do now is say, "I told you so."—C. G. G.

also questions the statement therein that the British altitude record and the record for the greatest speed in Great Britain are also held by a French monoplane of the advertised make. This is, in fact, true, because the official altitude record is held by Squadron-Commander Briggs, R.N., and the record for the greatest speed still stands to the credit of the late Mr. Hamel, in the Gordon-Bennett Race at Eastchurch in 1911.

The altitude record has since been beaten on several occasions, notably by Mr. Norman Spratt and by Major Becke, R.F.C., on "R.E." biplanes with Beardmore-Daimler engines, and Mr. Hamel's speed has been beaten by Sopwith, Avro, Martinsyde, and "S.E." biplanes, with Gnome engines, but in none of these cases have records been officially timed and claimed.

C.H. HAZARDER



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Do you KNOW that the Beatty School is recommended by the best pilots?  
This is because they KNOW that the Beatty School has all the features that  
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PUSHER TYPE.		SCHOOL EQUIPMENT.	TRACTOR TYPE.	
60 h.p.	Beatty-Wright dual control		45 h.p.	Caudron
50 h.p.	" " " "		35 h.p.	"
40 h.p.	" " " "		35 h.p.	"
50 h.p.	" " single seater			

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## Naval and Military Aeronautics.

### GREAT BRITAIN.

From the "London Gazette," May 18th, 1915.

WAR OFFICE, MAY 18TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers to be flight Coms.—Capt. H. C. MacDonnell, R. Irish. April 27th. Sec. Lieut. R. M. Pike, S.R., and to be temp. capt. May 4th

Flying Officers.—April 12th: Sec. Lieut. C. D. Fuller, S.R.; Sec. Lieut. J. C. H. Barfield, S.R.; Sec. Lieut. L. A. Tilney, D. of Lancaster's Own Yeo., T.F.; Temp. Sec. Lieut. O. G. Hake, 12th Hants, and transd. to gen. list.

From the "London Gazette," May 19th, 1915

WAR OFFICE, MAY 19TH.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—To be sec. lieuts. (on prob.). May 1st: F. W. Stent, V. M. Grantham. May 6th: J. B. Robinson, J. A. W. Bourne. V. W. Eyre. May 7th.

From the "London Gazette," May 20th, 1915.

WAR OFFICE, MAY 20TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officer—Temp. Sec. Lieut. E. A. H. Viscount Exmouth, 7th R. Berks, and transd. to gen. list, New Armies. May 4th.

ARMY SERVICE CORPS.—Temp. sec. lieut. to be temp. Lieut.—March 20th: J. D. Sturrock.

From the "London Gazette," May 21st, 1915.

ADMIRALTY, MAY 17TH.

ROYAL NAVAL AIR SERVICE.—Granted temporary commission as flight lieut.: C. F. Pollock. April 15th.

Flight Sub-Lieut. G. H. Scott specially promoted to rank of flight lieut. Dated May 4th.

WAR OFFICE, MAY 21ST.

ROYAL FLYING CORPS (MILITARY WING).—Flying Officers: Sec. Lieut. C. H. Pixton, S.R. April 2nd. May 6th: Capt. J. G. Hearson, R.E.; Lieut. F. E. Hellyer, 9th Hants, T.F.

From the "London Gazette," May 22nd, 1915.

WAR OFFICE, MAY 22ND.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—To be sec. lieuts. (on prob.). April 30th: J. P. C. Cooper, A. C. Horsburgh. May 17th: H. K. Maxwell, G. P. Grenfell.

### NAVAL.

The following appointments were notified at the Admiralty on May 18th:—

ROYAL NAVAL AIR SERVICE.—The undermentioned have been entered as prob. flight sub-lieuts. for temp. service, and appointed to the "President," additional, for R.N.A.S., to date as stated: O. Butcher and H. E. Crawford, May 17th, and N. V. Wrigley, May 24th.

\* \* \*

The following appointments were notified at the Admiralty on May 19th:—

ROYAL NAVAL AIR SERVICE.—Flight Sub-Lieut. (Actg. Flight Lieut.) G. H. Scott specially promoted to the rank of flight lieutenant, with seniority May 4th.

Mr. C. F. Pollock granted a temporary commission as flight lieutenant, and appointed to the "President," additional, for R.N.A.S., to date April 15th.

Messrs. D. Gordon and G. H. Major granted temporary commissions as lieutenants, R.N.V.R., and appointed to the "President," additional, for duty with R.N.A.S., to date May 18th.

Messrs. F. H. Mitchell, F. A. Baldwin, and V. E. Dean granted temporary commissions as sub-lieutenants, R.N.V.R., and appointed to the "President," additional, for duty with R.N.A.S., to date May 18th.

Temp. Sub-Lieut. P. C. Douglass, R.N.V.R., transferred to R.N.A.S., as probationary flight sub-lieutenant, for temporary

service, and appointed to the "President," additional, for R.N.A.S., to date May 15th.

\* \* \*

The following appointment was notified at the Admiralty on May 20th:—

ROYAL NAVAL AIR SERVICE.—Flight Lieut. C. F. Landavis, to the "Ark Royal," to date May 19th.

\* \* \*

The following appointments were notified at the Admiralty on May 21st:—

ROYAL NAVAL AIR SERVICE.—The undermentioned have been entered as probationary flight sub-lieuts. and appointed to the "President," additional, for R.N.A.S.: H. K. Thorold, A. F. Warner, and E. W. Norton; also for temporary service, S. D. Felkin, H. S. Neville, E. L. Trower, A. H. Sandwell, and W. A. K. Dalzell, all to date May 25th.

\* \* \*

The following appointments were notified at the Admiralty on May 22nd:—

ROYAL NAVAL AIR SERVICE.—The undermentioned have been entered as prob. flight sub-lieuts. for temp. service, to date as stated: W. B. Lawson and C. R. Terraneau, May 31st; A. D. Thompson, May 14th; Messrs. D. Gill and H. Hall entered as prob. flight sub-lieuts., to date May 21st and May 14th respectively.

\* \* \*

The writer has been fortunate enough to receive some further information about the "Ramsgate" Zeppelin from an eyewitness who was in France at the time. Apparently the machine came in from seaward, and as soon as it hove in sight the naval aeroplanes started out to attack it. At the time, the Zeppelin seemed to be yawing about a good deal, and gave the impression that it was not under proper control, which suggested that the steering-gear had been hit before it got there, or had gone wrong somehow.

Directly the aeroplanes appeared the machine began to rise, and a couple of very large dark objects were hove overboard and fell in the sea. The airship was then some miles away, so the objects must have been large or they could not have been seen, as they were, with the naked eye. It is stated that they looked about the size of a man, so it seems possible that they were machine-guns or, at any rate, ammunition cases. It is even suggested that they may have been the bodies of two of the crew who had been killed by fire from the Dover forts.

When the aeroplanes came within attacking distance those who were able to climb sufficiently opened fire with machine-guns, and it is stated that four machine-guns at least replied from the gondolas of the Zeppelin. The one aeroplane which got above it was an Avro two-seater, and from this the four bombs mentioned in the Admiralty communiqué were dropped.

One at least exploded fairly near the stern of the airship, and smoke issued from the place where it struck. Why there should have been smoke without fire cannot be explained, seeing that the bombs did not appear to be of the incendiary type. But, assuming that a rear compartment was burst, that would account for the tail dropping and a sudden rise for a thousand feet or more. The jettisoning of the heavy bodies mentioned might perhaps account for the ship continuing to lift even after a rear compartment was burst. At any rate, height and distance combined to take her out of sight of those on the ground.

A note from a different part of the war area altogether says definitely that the Zeppelin was "done in," but that may only be the result of rumour.

It may be well to point out that if the ship had enough gas left to lift her as she did lift, and if she neither broke nor caught fire after she passed out of sight, there is no reason why she should not land safely. For even if most of her sudden jump upwards was due to air-pressure below the ship as her nose went up and her tail sank, that dynamic effect would only last for a minute or two; and if she could float at all at a high level she would have to let out gas in order to descend, for, after

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Special qualities are made to meet all ROYAL AIRCRAFT FACTORY SPECIFICATIONS FOR SHEETS, BARS and FORGINGS.

Firth's Steels are thoroughly reliable and uniform throughout; they have behind them the firm's 70 years' experience in the manufacture of High-grade Steels.

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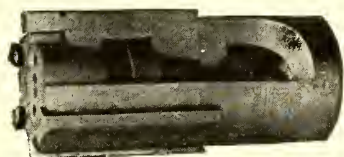
**THOS. FIRTH & SONS Ltd., Sheffield.**

**FIRTH'S F.M.S. SHEET STEEL**

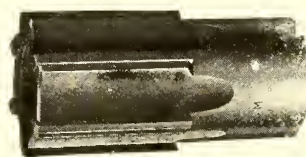
has been specially prepared to meet the R.A.F. Specification No. 9.

It is a High-grade Mild Steel which, owing to its purity, is to a high degree immune from fatigue due to vibration. F.M.S. may be bent cold both ways of the grain without cracking, and drilled, punched and sheared with ease; it is also a satisfactory material for acetylene welding.

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**VICKERS  
LIMITED.**



**PATENT ADJUSTABLE REAMERS.**



**VICKERS VANADIUM HIGH POWER DRILLS.**

(Made of Vanadium High-speed Steel.)



**QUICK CHANGE DRILL CHUCKS.**

The Standard tools for efficient and economical drilling and reaming.

ALL COMMUNICATIONS TO TOOLS DEPT.,  
**VICKERS HOUSE,**  
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all, a Zeppelin is only a lot of balloons tied together, and must obey the same fundamental laws as any ordinary balloon.

Mr. C. F. Pollock, whose appointment to the R.N.A.S. is notified, is one of the earliest, if not of the oldest, members of the Royal Aero Club, and has for many years served on its various committees. He is a balloonist of very great experience and has been appointed to assist in the preliminary training of airship officers.

There is good reason to believe that the Zeppelin which was recently reported to have fought a submarine in the North Sea was actually brought down. It is stated that the submarine was spotted by the Zeppelin as she emerged, and several bombs were dropped at her, some uncomfortably close. The officer commanding the submarine promptly got his gun up on deck and opened fire, and it is certain that one shot at least hit the Zeppelin forward. It is probable that the shell did not explode on perforating the fabric and light framework, or the shell may have exploded right inside a hydrogen bag, for the ship did not catch fire. It is also possible that broken framework may have torn several gas-bags.

In any case, the ship was seen to be a few moments afterwards very much down by the head, and when last seen was close to the surface of the water. As there were a number of German destroyers about, the submarine was unable to wait and see what actually happened.

If the airship sank, these destroyers would pick up her crew and bring news of the incident. It may have been noticed that while the German report states that one of our submarines was sunk by the airship—which must have been a matter of assumption without evidence—it is not stated that the airship herself returned undamaged, or, in fact, that she ever returned at all.

The German statement is that she fought with "several" submarines, which might well be a little effort of imagination to account for the loss of the ship among those who knew of her loss, which would be bound to leak out in time, even if concealed by the papers by order of the Censor.

#### MILITARY.

The Field-Marshal Commanding the British Forces in France reported as follows on May 21st:—

Last night we brought down a German aeroplane in the neighbourhood of Ypres.

It is officially announced that the King has been graciously pleased to approve of the grant of the Victoria Cross to the undermentioned officer for a conspicuous act of bravery and devotion to duty whilst serving with the Expeditionary Force: SECOND LIEUTENANT WILLIAM BARNARD RHODES-MOORHOUSE.

Special Reserve, Royal Flying Corps.

For most conspicuous bravery on April 26th, 1915, in flying to Courtrai and dropping bombs on the railway line near that station. On starting the return journey he was mortally wounded, but succeeded in flying for thirty-five miles to his destination, at a very low altitude, and reported the successful accomplishment of his object. He has since died of his wounds.

[All will be glad to see this posthumous honour to so gallant an officer. The Cross will be treasured by his wife and son in memory of him who has died so finely. It is to be hoped that similar honour may be done to any other officer who has died in performing a similar act of bravery.—Ed.]

The following casualty in the Expeditionary Force was notified on May 24th, under date May 17th:—

#### KILLED.

Braithwaite, Lieut. M. L., Royal Field Artillery, attd. Royal Flying Corps.

The following appeared in the obituary columns on May 19th:—

BRAITHWAITE.—Killed in France, May 17th, Flight-Lieutenant Michael Lloyd Braithwaite, youngest son of Mrs. J. M. Braithwaite, of 10, Basil Mansions, and dearly-loved husband of Bertha Braithwaite, of 50, Kensington Court.

Michael Lloyd Braithwaite, fifth and youngest son of the late the Rev. J. M. Braithwaite, vicar and rural dean of Croydon, and of Mrs. Braithwaite, of 10, Basil Mansions, S.W., was born on April 27th, 1881, at Maidstone, and was educated at Charterhouse and New College, Oxford. He married in 1906 Bertha, daughter of Mrs. Washington Sullivan, and he was a brother of Miss Lilian Braithwaite. He obtained a commission in the Royal Field Artillery in September last and was seconded for duty with the Royal Flying Corps. He took his certificate, No. 979, on a Maurice Farman at Netheravon on November 25th, 1914.

He went to France in February and was killed on May 17th.

One may perhaps be permitted to point out that he was not a Flight-Lieutenant, that title being a naval rank. He was in fact a lieutenant in the Army, graded as a flying-officer, R.F.C.

The "Times" states, presumably on information received from the deceased officer's family, that Mr. Braithwaite was the only member of his squadron whose machine had not been disabled during the heavy fighting of the preceding fortnight. He was sent to Paris to test new machines and bring them to the base. On one of these journeys he went to the help of a brother officer who was in difficulties, and as he landed, near the village of Auffargis, near Versailles, his own machine struck an irregularity in the ground and overturned. He was seriously injured and died in hospital soon after.

An officer on Sir David Henderson's staff wrote:—"He had displayed great courage and skill in all his duties and in flying over the German lines ever since he came out."

The following appeared in the obituary columns on May 25th:—

JOHNSTONE.—Killed in action in France, on May 20th. Lieut. J. A. Johnstone, Royal Field Artillery, attached Royal Flying Corps, aged twenty-two, eldest son of the late Major J. H. L'E. Johnstone, R.E., M.V.O., of Alva, and The Hangingshaw, and Mrs. Johnstone, 8, Cadogan Court Gardens, S.W.

The following appeared in the Wedding Announcements of May 20th:—

JOUBERT DE LA FERTE—HALL.—On May 19th, 1915, at St. James' Church, Weybridge, Surrey, by the Rev. Spencer R. Buller, rector of the parish. Captain Philip Bennet Joubert de la Ferté, Royal Field Artillery and Royal Flying Corps, elder son of Colonel C. H. Joubert de la Ferté, I.M.S. (retired), and of Mrs. Joubert de la Ferté, of The Ferns, Weybridge, to Marjorie Denison, younger daughter of the late Frederick Joseph Hall, of Sheffield, and of Mrs. Hall, of Larchfield, St. George's Hill, Weybridge.

Captain Joubert, R.F.A. and R.F.C., has already done good service and has been mentioned in dispatches. Prior to the outbreak of war, he commanded a Flight of No. 3 Squadron at Netheravon, and did valuable experimental work. All will wish him and his bride long life and every happiness.

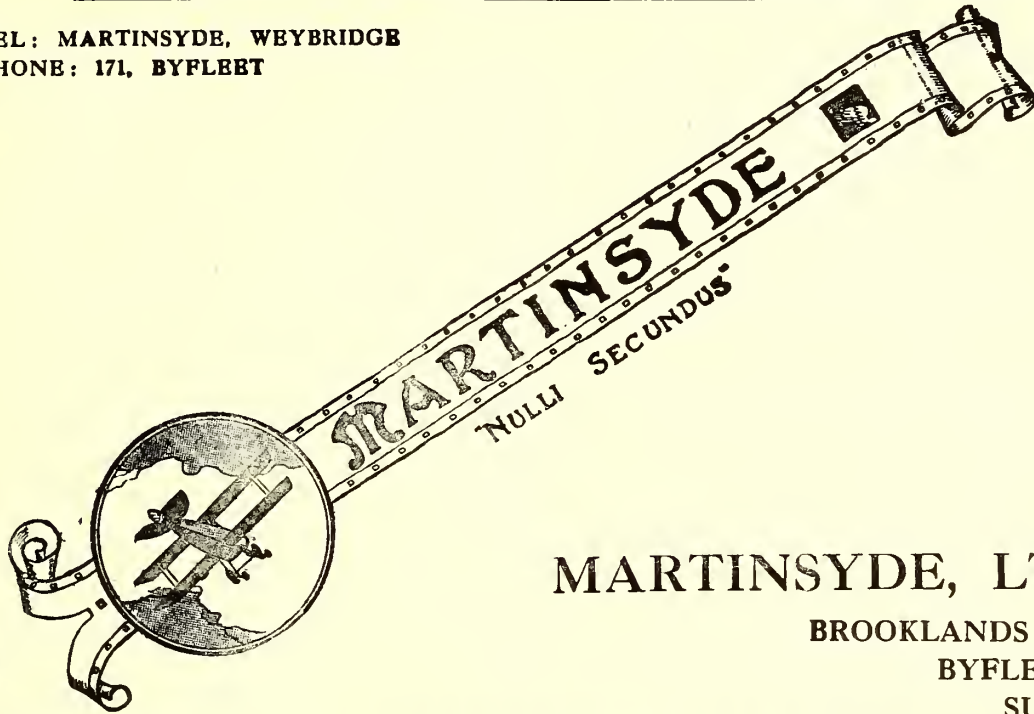
A marriage has been arranged, and will take place shortly, between Harold MacDonnell O'Malley, Royal Flying Corps, third son of the late Middleton Moore O'Malley, J.P., and Mrs. O'Malley, of Ross, County Mayo, and Nancy Olga, second daughter of Mr. and Mrs. George Edwardes, of 11, Park Square, and Ogbourne, Wilts.

The marriage arranged between Captain W. R. Freeman, of the Manchester Regiment and Royal Flying Corps, and Gladys, youngest daughter of Mr. Mews, of 90, Westbourne Terrace, will take place very quietly, owing to the war, at St. James's Church, Sussex Gardens, on Saturday, June 5th, at half-past two o'clock.

A reader of THE AEROPLANE sends the following extracts from a letter from a relative serving in France:—"I witnessed a very interesting incident this morning (May 9th), and thought perhaps you would like to know about it. At 3 a.m. to-day I was on sentry duty outside our billet, which is a short distance

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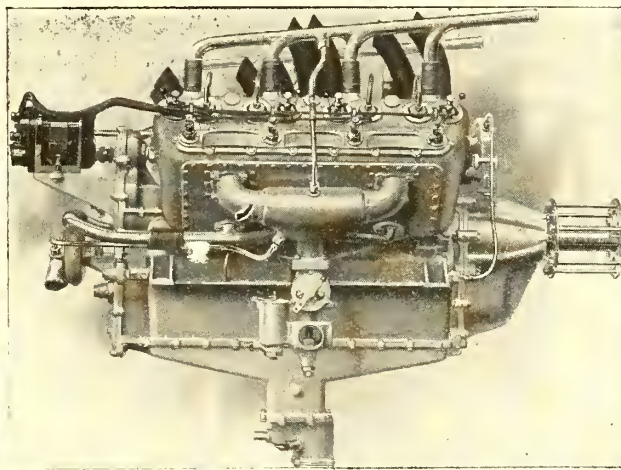
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from the firing-line, when a large French biplane passed overhead, flying rather low. I watched it closely as it went towards the German trenches, still flying low, when a terrific rifle-fire opened on it. This was kept up for a minute or two, then it made a sharp turn. I could easily see something was wrong, and after a sudden descent it landed in flames. The cheers that went up from the German's side could be heard by us quite plainly. I did feel vexed about it. As to whether the aviators were killed or not I'm unable to say, neither do I know if the aeroplane managed to get over to our side or the other side. You no doubt will know all particulars probably before receiving this. [Unfortunately, details of casualties are not published or notified.—Ed.] I could see the aeroplane after it landed, but could not leave my post to investigate as I should have liked to have done."

Later in the day he writes:—"On Friday last an aeroplane came in for a heavy shelling from the Germans. This is an everyday occurrence, but what I thought very extraordinary was that a skylark was singing away below the aeroplane and seemed to defy all the shells bursting round. . . . I was talking to some French soldiers; they informed me that the two men who came down in the aeroplane this morning were burnt to death. I hope it's not true."

There is something singularly touching in the final remark, as showing that the infantryman, after days of heavy shelling in the trenches—as other parts of his letter show—should find room in his mind to bother about the fate of two utterly unknown aviators.

### FRANCE.

The communiqué of May 20th says:—

The day has been marked by a sharp artillery duel, in the course of which two German aviators were brought down, one by the British artillery and the other by ours.

\* \* \*

The communiqué of May 21st says:—

North-east of Arras, near Fresnoy, we shot down an enemy aeroplane.

\* \* \*

The special correspondent of the "Morning Post" wiring from Annemasse on May 16th says:—

"I have learnt to-day from a French civilian that the Germans themselves estimate the destruction caused at St. Quentin by the British aeroplane attack delivered some six or seven weeks ago at twelve million francs. The bombs set fire to a train loaded with petrol, and also destroyed large quantities of stores and some ammunition. Enormous quantities of ammunition would have been destroyed, but they were removed the day previously.

\* \* \*

The "Morning Post" correspondent in Paris on May 23rd distinguished himself by making the finest howler of the war. He reported that "a Taube, disguised as a French biplane, flew over Paris on the 22nd, and dropped several bombs without killing or wounding anyone." He further reported that "in a few minutes six French aeroplanes started in pursuit, and the German machine took to flight." So evidently the notorious "escadrille de Paris" is waking up.

He unfortunately omitted to explain how a curved-wing monoplane was disguised as a straight-wing biplane.

### ITALY.

A communiqué issued on May 24th says:—

It was foreseen that as soon as war was declared offensive actions, to produce moral effect rather than to achieve any military purpose, would be undertaken against our Adriatic coast. Provision was accordingly made to meet them and to make them of very short duration. From four to six o'clock this morning small naval units of the enemy, and in particular destroyers and torpedo-boats, did in fact fire upon our Adriatic shores. Aeroplanes even attempted an attack upon the arsenal at Venice.

The enemy's aeroplanes were bombarded by our anti-aircraft guns, and were attacked by an Italian aeroplane and a dirigible flying over the Adriatic. The places attacked are Porto Corsini, near Ravenna, which immediately replied

and forced the enemy to instant retreat; Ancona, where the attack was particularly directed to interrupt the railway line, and caused slight damage, easy to repair; Barletta, where the attack was made by a scout and by a destroyer, which one of our ships, escorted by torpedo-boats, put to flight; and at Jesi, where the enemy's aeroplanes launched bombs on a hangar, though without hitting their object. No other reports concerning the operations of this unit have any foundation.

\* \* \*

A later communiqué says:—

Further information as to the aerial raid on Venice shows that there were two aeroplanes which threw eleven bombs without doing serious damage. The defence was prompt and efficacious and immediately put the hostile aviators to flight.

The slight damage done to the railway by hostile aeroplanes and ships early this morning has already been repaired.

The enemy's fire sank a German ship in the port of Ancona.

\* \* \*

The entry of Italy into the war adds very materially to the Allied air power. At the beginning of war, in August last, Italy had at least 200 aeroplanes—mostly fit for use—and readers of this paper know that she has been building and buying energetically ever since.

Her airships are more numerous and more effective than those of any other country except Germany, the new "V.1," being the fastest airship afloat.

Her pilots are brave and skilful, and she had over 200 of them last August. Consequently, Italy will force Germany to detach a large contingent of her aircraft to assist Austria, which is bound to have a good effect on the rest of the various Fronts.

### RUSSIA.

The communiqué of May 19th says:—

Near Jaroslau . . . in the course of the day we brought down several enemy aeroplanes, which were correcting the fire of the numerous enemy batteries.

\* \* \*

The communiqué of May 20th says:—

Detachments of enemy aeroplanes threw bombs on Przemyśl, against which the enemy attempted no other action.

### TURKEY.

The following passage in an official telegram regarding the operations in the Dardanelles issued at Cairo on May 19th refers to aircraft:—

On May 16th . . . our Howitzer Battery with the aid of aeroplanes blew up the ammunition wagons of the Turkish heavy howitzers, and later made a direct hit on one of the guns in front of the Australian and New Zealand Army Corps. The enemy's trenches and a new gun emplacement were demolished by howitzer fire.

\* \* \*

The following official telegram regarding the operations in the Dardanelles was issued at Cairo on May 22nd:—

The following has been received from the G.O.C. Mediterranean Force, and is published for information:—

On May 19th in the Gallipoli Peninsula . . . our aeroplanes dropped bombs amongst Turkish reinforcements landing in Ak Bashi Luman and caused considerable losses.

\* \* \*

The Eastern Mediterranean special correspondent of the "Daily Telegraph" reports that recently the "Goeben" was shelled by the "Queen Elizabeth" across the Peninsula, but that the intervening mountain range made operations difficult. An aeroplane directed the "Queen Elizabeth's" fire, and the "Goeben" was forced to retire.

### AUSTRIA.

A Vienna official telegram says:—

Our fleet during the night following the Italian declaration of war, namely, the night of May 23rd, undertook action against the Italian East coast between Venice and Barletta. At the same time our seaplanes threw bombs on the balloon shed of Thiarvalla, the military buildings at Ancona, and the arsenal at Venice, causing visible damage and fires.

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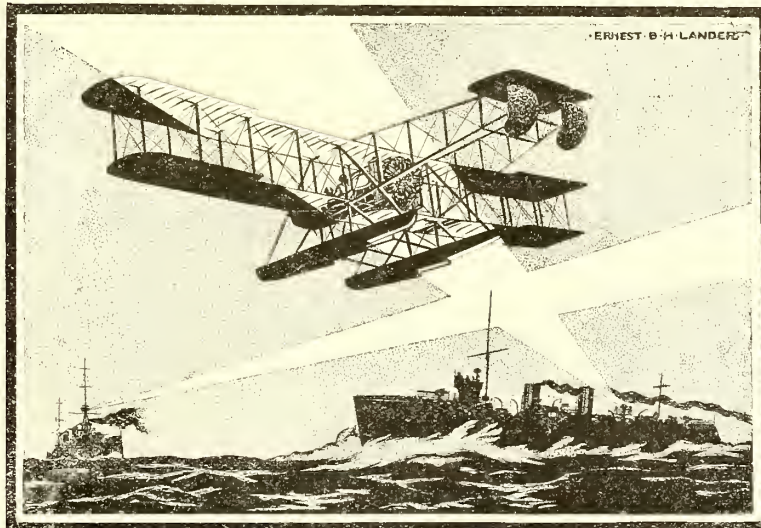
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## BELGIUM.

The correspondent of the "Telegraaf" in Ostend reports that Allied aviators again dropped bombs upon Ostend recently. One bomb exploded on an electric street car, killing twenty-four soldiers.

\* \* \*

The Havre correspondent of the "Matin" states that the organisation of and buildings on the aviation ground organised by the Germans at Ghisteltes, north-east of Ostend, have been totally destroyed by the attacks of Allied aviators.

## ROUMANIA.

The "Morning Post" correspondent at Bucharest wired on May 20th that an Austrian aviator while flying to Gladova threw three bombs on an abattoir at Severin, Roumania, wounding two soldiers. The Austrian Minister expressed regret to the Roumanian Government for the error, and said the Austrian Government would pay for all the damage.

[Evidently, the Austrian believed in getting his "blow in first," seeing that Roumania must come in with Russia soon.—Ed.]

## SWEDEN.

The Swedish Military aviation has suffered its first fatal loss, Flight-Lieut. Silow, one of the eldest and most experienced military pilots, meeting his end on the oldest Army biplane, while his passenger was severely wounded. As the aeroplane had just been repaired after a minor accident, one smashed interplane strut having been replaced, the likely cause is its having given way in the air.

\* \* \*

The Swedish Boy Association collecting money for a man-of-war, it has now been decided, as more use can likely be extracted from them, to present the Navy with five complete hydro-aeroplanes, the sum gathered being 100,000 Kr. (£5,506).—Ht.

## U.S.A.

A friend in New York writes:—"We were tickled to death to pick up an AEROPLANE, and see you dousing the so-called Capt. Janney. We arrived back in New York to hear some quirks or other had been walking about New York as large as life in uniform and talking 'some.' Of course, it rather annoyed us somewhat, so we immediately got busy finding out who these people were, and found, of course, they were an awful fake. This chap, I believe, originally went over with Canadians, but found the life likely to become too strenuous, and left. Anyhow, I fancy he's serving now in a much more unpleasant place. I tell you there are all sorts of hum-gruffins in this place, and one has to be pretty careful, but that murderous show of the 'Lusitania' has considerably altered things, especially in New York. These people here did not and would not realise what a barbarous crowd we had to deal with. Now that they have been touched up they are properly angry, and instead of the usual paper heading, 'Washington calm but waiting,' things are quite agitated."

## The Aeronautical Society of Great Britain.

The annual general meeting of the Aeronautical Society of Great Britain was held on Thursday last, the 20th inst., at the Royal Society of Arts, John Street, Adelphi. Major-General R. M. Ruck, C.B., R.E., presided.

The following gentlemen were elected to fill the vacancies on the Council for the ensuing year:—A. E. Berriman, Griffith Brewer, Squadron-Comm. Alec Ogilvie, R.N.A.S., Mervyn O'Gorman, C.B., F. Handley Page, Colonel H. E. Rawson, C.B., Dr. A. P. Thurston, and Squadron-Comm. G. Aldwell, R.N.

The following amendment to Rule 11 was unanimously adopted:—

"If no nominations of new candidates for the Council are received, a ballot paper shall not be circulated as provided above, and the retiring Members of Council shall be proposed for re-election at the annual general meeting."—BERTRAM G. COOPER, Secretary.

## Presentation Aeroplanes.

The members of the Overseas Club, of which the King is the patron, are celebrating Empire Day by presenting the "latest type of aeroplane" to the Royal Flying Corps. A cheque for £1,500 has been paid to the Secretary of State for War by the Central Committee of the Overseas Club, and has been acknowledged by the Army Council.

The Overseas Club is appealing for a number of aeroplanes to form an Imperial aircraft flotilla, and they hope that the machine which has been presented is but the precursor of many more, the idea being to obtain sufficient subscriptions from the members and friends of the Overseas Club to present an aeroplane from each section of His Majesty's Dominions.

The scheme is meeting with widespread support. Among those who have taken an interest in it are the Army Council, the Secretary of State for the Colonies, the Duke of Connaught, Mr. W. P. Schreiner, High Commissioner for South Africa, and Sir George E. Foster, Canadian Minister of Trade and Commerce.

The King has sent the following letter to the Overseas Club, expressing his interest in its scheme for providing an Imperial Aircraft Flotilla:—

Buckingham Palace, May 19th, 1915.

Dear Sir,—The King is interested to hear of the generous action of the Members and Friends of the Overseas Club in presenting to the Royal Flying Corps an aeroplane, and of their intention to make further similar contributions.—Yours very faithfully,

STAMFORDHAM.

The Honorary Secretary, The Overseas Club.

Earl Kitchener has also sent the following letter to the Club:—

War Office, Whitehall, S.W.

Dear Sir,—I am gratified to hear of the prompt response to the appeal issued by the Overseas Club to its members and



COMING ASHORE.—The pilot of a Sopwith seaplane being brought ashore after a patrol flight.



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friends in all parts of his Majesty's Dominions Overseas, which has already permitted the presentation of an aeroplane to the Royal Flying Corps.

I was interested to learn that the aeroplane in question had been paid for by the generous donations of several thousands of British subjects overseas, and, as I understand that you are hoping to obtain the gift of an aeroplane from each part of the Empire, I sincerely wish you success in your efforts.—  
Yours very truly,  
KITCHENER.

The Honorary Secretary, Overseas Club.

The idea is to ask every section of the Empire to provide an aeroplane. Each district which provides £1,500 can have the machine named after it. In addition to the one already provided Gibraltar, Nova Scotia, and Saskatchewan have each undertaken to supply an aeroplane.

The Halifax, N.S., branch of the "Overseas" Club are inviting subscriptions from Nova Scotians to the Aeroplane Fund for the purpose of presenting a warplane to the Royal Flying Corps for service at the front, and substantial amounts have already been received.

Subscriptions to the Fund should be sent to the various branches of the Royal Bank of Canada.

The Secretary of State for the Colonies has issued the following notice for publication:—

On the suggestion of the Gibraltar Chamber of Commerce and Exchange Committee, as representing the civil population of the Colony, a sum of £2,500 has been presented to the Army Council by the Government of Gibraltar, to be devoted to the construction of a military aeroplane.

The first aeroplane presented by the Overseas Club is called "Overseas No. 1." Doubtless when it is a trifle worn and erratic in its control it will be called "Half Seas Over."

### **In the House.**

The Marquess of Crewe said, on behalf of those who represented both the War Office and the Admiralty, that they had throughout been satisfied that so far they had been able to account for aliens against whom every kind of suspicion existed.

It had been said that in the event of an aircraft attack being made on London it would be possible for unintended enemy aliens, in pursuance of some secret organisation, to combine for purposes of incendiarism or some form of attack. That was not an argument to which the military authorities had attached great importance.

Mr. Hugh Edwards having asked what measures are being taken to deal with outbreaks of fire in the London area in the event of a Zeppelin raid, and what steps have been taken to utilise the proffered services of the various volunteer corps in this connection,

Mr. McKenna replied, in a written answer. "I am not prepared to state the measures devised for dealing with the contingency referred to, or to say more than that those measures are the outcome of most careful consideration by all the authorities concerned. It is not, I am informed, possible to utilise the various volunteer corps in this connection."

### **The Invasions of England.**

The Ramsgate correspondent of the "Morning Post" reports that Mr. J. Herbert Smith, who was injured by a Zeppelin bomb in the Bull and George Hotel on the 17th, died on the 18th. Mrs. Florence Lamont, who was injured at the same time, died on the 20th. The first reports stated definitely that neither of these unfortunate people was seriously injured.

The damage to the hotel is estimated at from £3,000 to £4,000. According to the police, 18 incendiary and 3 explosive bombs fell. There was a thanksgiving service in St. George's Chapel on the 18th for the preservation of the town.

The Commissioner of Police has issued a notice stating that he is advised that it would be well for persons taking refuge in houses in case of attack by aircraft to keep all windows and doors on the lower floors closed, so as to prevent the admission of deleterious gases.

### **An Italian Aero-Camera.**

The aim of the distinguished inventors of the Piazza-Douhet Photographic Machine was to incorporate into their patent aero-camera the following four features which they consider essential to an apparatus for obtaining photographic pictures from an aeroplane, viz.:—

- (a) Entirely automatic action at the will of the operator.
- (b) A very great number of negatives without re-charging.
- (c) Precise knowledge of the orientation of each view taken.
- (d) Precise knowledge of the altitude at which each view was taken.

These latter two points are obviously indispensable.

Lieut.-Col. Douhet, sometime C.O. of the Italian Flying Corps, and Major Piazza, Italy's first military air pilot, now in command of the "Mobile Section" of the same, are names which vouch for the seriousness of their bearers' intention and its effective realisation.

If the soul of an invention is its simplicity, this might be termed a great-souled invention. It can even be described simply.

Referring to point (a), the camera itself, of normal size, is attached to the tail outriggers or fuselage of the aeroplane in such a way that the axis of its lens is always perpendicular.

A tiny propeller, such as is used to pump oil on aircraft, transmits power to turn the operating handle of the camera through a diminutive gear-box giving 8 speeds and neutral.

A lever—equally small—for effecting the change of gear works in a quadrant fixed close to the pilot.

Of nine notches on this quadrant eight are marked to correspond to eight different altitudes ranging, for example, from 300 to 1,000 metres—say, from 900 to 3,000 feet—and one is for the neutral or off position.

On the pilot engaging that gear of which the altitude-mark is nearest to the height shown by his height-recorder, by moving the gear-lever from the "off" notch to that of the altitude at which he is flying, exposures begin regularly and at the correct time intervals, and the country over which the aeroplane is passing is filmed without break or overlap. It is, of course, clear that the higher the aircraft is navigating the less frequently exposures need to occur.

Referring to point (b), the Piazza-Douhet aero-camera holds a film to take 300 views 2½ inches by 2½ inches sufficient to film a strip of land nearly a mile broad and 160 miles long if operating from the maximum height at which it is designed to be thoroughly efficient, namely, 3,000 feet.

Referring to points (c) and (d), these two essentials have been ingeniously attained by the fitting of a combined height-recorder and compass to the photographic apparatus in such a position that they appear in the corner of each negative. In working out calculations, any allowance for compass error due to the metallic mass of the aeroplane can easily be made.

With the gear-lever in neutral ordinary separate photographs can be taken, for which purpose a handle is provided, one complete turn of which prepares, exposes, and re-charges the camera.—T. S. HARVEY.

### **Our Intelligent Populace.**

The following amusing story is told by Mr. Clarence Winchester ("Ornis"):

One of our passengers on the Ruffy-Baumann biplane had the misfortune to lose his cap, which blew off, and fell into a field just outside the Hendon aerodrome. I happened to notice a labourer stand in doubt for a few seconds and then timidly approach the fallen headgear. He gingerly picked it up, examined it closely, and then smiled triumphantly as he walked away with his find. I went up to him, bartered for the cap, was successful, and just as I was about to leave the intelligent man-in-the-street (or "field" in this case) he said: "Tell yer the truth, sir, I didn't like to touch the thing. I thought at first a bloomin' Zeppelin 'ad 'opped over 'ere and dropped a bomb. I s'pose it was one o' them airships from the airdrome over there!"—and this, dear Editor, at Hendon! Still, we were all very pleased; the passenger regained his hat, the labourer gained sixpence (!) and I gained an intimate acquaintance with the very lay mind. Perhaps he was a daily paper aviation expert disguised.

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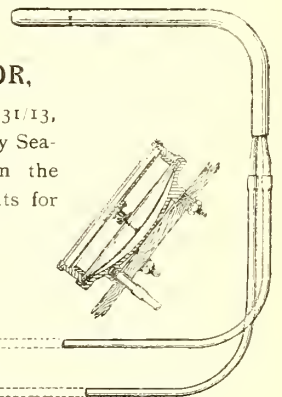
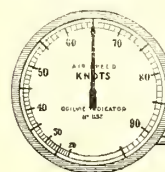
Telegrams—  
"Soaring" Bognor

## The BRITISH WRIGHT Co., Ltd.

In view of the arrangement made between the Treasury and the British Wright Co., Ltd. in respect to the free use by the Navy and the Army of the British Wright Patents, the Directors of the Company beg to notify all British Manufacturers that machines embodying the constructions so patented, may be freely manufactured in pursuance of such Government orders. The Company is prepared to receive applications from British Manufacturers for licences to manufacture under the Wright Patents in respect to machines for private use in Great Britain or for export to Foreign Governments.

### THE OGILVIE AIR SPEED INDICATOR.

Patents No. 13796/13 and No. 27931/13, now so largely used on the Navy Seaplanes, may be obtained from the Company who are the sole agents for these indicators in Great Britain.



**THE BRITISH WRIGHT CO., LTD.,**  
33 CHANCERY LANE, LONDON.

KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.



### The Wilbur Wright Lecture.

On May 20th, the third Wilbur Wright Memorial lecture was given before the Aeronautical Society at the Royal Society of Arts by Professor G. H. Bryan, his subject being "The Rigid Dynamics of Circling Flight," in which he dealt with the mathematics of Steady Motion in a Circle and the Lateral Steering of Aeroplanes.

The following extract from his lecture, reproduced from the advance copy courteously supplied by the Secretary of the Aeronautical Society, will explain why the substance of the lecture is not fully reported in this paper.

#### VIII.—EFFECT OF A RUDDER BEHIND THE CENTRE OF GRAVITY.

14. The effect of such a rudder will be to produce a force  $Z_1$  and a couple  $M_1$  connected by the relation  $M_1 = lZ_1$ , where  $l$  is the distance of the rudder behind the centre of gravity. These results are, of course, only approximate and conditional on the rudder being only turned through a small angle. If it is turned through a large angle it will also give rise to a resistance, which we do not here consider. The assumed position of the rudder is not such as to give any moment  $L$  about the axis of  $x$ .

The plan on which the following equations are built up is as follows:—

The extra moment in the  $L$  equation due to  $B - C$  is balanced by shifting the turning point from its previous distance to a distance  $x + \xi$  (although this makes  $\xi$  negative it is more convenient not to call the distance  $x - \xi$ ).

This upsets the equilibrium in the  $M$  equation and the effect is balanced by the couple  $M_1$  due to the rudder.

The corresponding force  $Z_1$  is made to balance the other forces in the axis of  $z$ .

Finally, when the equations are written down we have three equations to determine the three unknowns  $\xi$ ,  $Z_1$  and  $\phi$  corresponding with circular motion corresponding with any given values of the radius  $a$  and velocity  $U$ .

When these substitutions are made and we take account of the fact that  $L_a$  and  $M_a$  have been made to vanish for  $\xi = 0$ , we obtain

$$-W \cos \phi \frac{U^2}{ga} + W \sin \phi = -\frac{KU^2}{a} \cos \phi \int \sin \beta (2\mu z - x \sin \beta) dS^1 - \xi \int \sin^2 \beta dS^1 - Z_1 \quad (24e)$$

$$(B - C) \sin \phi \cos \phi \frac{U^2}{ga^2} = -\frac{KU^2}{a} \cos \phi \int z \cos \beta \sin \beta dS^1 \quad (24f)$$

$$0 = \frac{KU^2}{a} \cos \phi \int \mu z \sin \beta dS^1 - Z_1 l \quad (24g)$$

and we have already seen from (20), (21), that for rectangular planes

$$\int (2\mu z - x \sin \beta) \sin \beta dS^1 = -\frac{3}{2} \mu b S^1 \sin \beta \quad (25)$$

Also we have, still for rectangular planes,

$$\frac{K \xi b}{2} S^1 \cos \beta \sin \beta = -\frac{(B - C) \sin \phi}{ga} \quad (26a)$$

$$Z_1 l = -(B - C) \sin \phi \cos \phi \frac{U^2}{ga^2} \frac{\mu}{\cos \beta} \quad (26b)$$

finally

$$-W \cos \phi \frac{U^2}{ga} + W \sin \phi = \frac{KU^2 S^1 \mu b}{3a} \sin \beta \cos \phi + (B - C) \sin \phi \cos \phi \frac{U^2}{ga^2} \left[ \frac{\mu}{\cos \beta} - \frac{2 \tan \beta}{b} \right] \quad (26c)$$

Substituting  $W = KU^2 S^1 \mu \cos \beta$ , which is true if  $U$  is equal to the velocity in rectilinear motion as assumed approximately; writing  $U^2 = 2gh$ ,  $B = W r_2^2$ ,  $C = W r_1^2$ , we get

$$-2h + a \tan \phi = \frac{3}{2} b \tan \beta + \frac{2(r_2^2 - r_1^2) \sin \phi h}{a \cos \beta} \left[ \frac{\mu}{l} - \frac{2 \sin \beta}{b} \right]$$

Since we have found from Mr. Harper's condition of stability that  $\mu/l < \frac{1}{2} \sin \beta/b$  it follows that the last term must be negative and we may write the equation

$$a \tan \phi + \frac{2(r_2^2 - r_1^2) h}{a \cos \beta} \left[ \frac{2 \sin \beta}{b} - \frac{\mu}{l} \right] \sin \phi = 2h + \frac{3}{2} b \tan \beta \quad (27)$$

These results agree fairly well with what one would naturally expect from general considerations.

The Gold Medals of the Society, awarded to Professor Bryan and to the late Mr. E. T. Busk, were presented to the lecturer and to Mrs. Busk, on behalf of her son, who was burnt to death while flying at Farnborough in November last, owing to the R.A.F. engine which was fitted to his machine setting fire to it.

Major-General R. M. Ruck, Chairman of the Society, made the presentation. He stated that more than 100 members of the Society were on active service, and nine had been killed or died while on service connected with the war.

Lieutenant-Colonel W. S. Brancker, R.A., Assistant-Director of Military Aeronautics, moved a vote of thanks to Mr. F. W. Lanchester, who presided, and said the war had fulfilled some of Wilbur Wright's greatest dreams.

We had taken on active service a number of different types of aeroplane, and before two months of war were over it had been proved that British design and construction were far superior to those of our Allies and our enemies. Backed by

the magnificent performance of our pilots this enabled us to establish a virtual command of the air so far as concerned the British Army. Every German aeroplane was at once attacked and driven off, and it became an almost invariable rule that no German would face a British aeroplane.

Lately, however, the German aeroplanes had greatly improved in speed and climbing power, possibly owing to more powerful engines. At the present moment, there were German aeroplanes which were faster than all but our fastest machines, and the result was that the German aviators had become much bolder, and had to be driven away instead of being hunted as formerly. The Germans had to a great extent ceased to make reconnaissances over our lines because we gave them such a bad time, but they had taken to attacking our aeroplanes while they were observing artillery or on reconnaissance. It had consequently become almost a regular custom for the R.F.C. to send up two aeroplanes together, one to reconnoitre and the other to fight.

The reason for the Germans coming so near to equality with us in aircraft was that when war broke out the aero engine was practically undeveloped in this country, and we had had to be content with comparatively low-powered French engines. Already high-powered British engines were in use on active service, and the pendulum was swinging back again.

British design, supported by sufficient horse-power, was again proving superior, and we had already given the Germans some unpleasant surprises with new machines.

Many points of interest had been discovered in the war. One was the conflict between the weight-carrying and rapid climb. Fighting in the air demanded weight-carrying qualities, every machine having to lift some form of defensive armament, or firearms or bombs, as well as field glasses, cameras, wireless equipment, and so forth. Naturally, the pusher type, originated by the Wrights, had proved superior for the use of weapons; one could see out of it better.

Armour had been proved necessary to keep out splinters of shells. But speed, climb, and ease of handling were of vital importance, and must exist if the pilot was to have a fair chance of damaging his enemy.

In spite of the demand for standardisation and rapid output during war, we were still developing the qualities of the British aeroplane. As the war went on he was sure that the demand for speed, climb, and lift would become greater.

The stable aeroplane, of which Colonel Seely told the Society last year, had become a standard type. Stability had proved of great value in the war, for a pilot flying alone could have his hands free for offence and defence, for using his glasses, taking photographs, etc. He could even kneel on the seat and look out over the tail. It was also the only type of machine on which a hastily trained pilot could be depended to fly. We had to train pilots rapidly now, and the stable machine was an absolute Godsend.

### New Thomas Tractors.

The latest type Thomas tractor biplanes seem likely to do good service for whatever country is able to acquire them. In the unavoidable absence of the Austro-Daimler engines for which they were designed they are now fitted with 90-h.p. Curtiss engines, which seem to give highly satisfactory results, and the speed variation is apparently the same as in the original machine.

Some slight alterations have been made in detail design, for example a fixed fin is now fitted with an unbalanced rudder, instead of a balanced rudder. Also, the engine bonnet is now strapped down with a leather strap, instead of being held by a number of wing nuts. The writer is not sure that this is an improvement, for if a stray bullet cut the strap and the bonnet flew up and jammed between the fuselage and the upper plane there would be a horrible smash, for the machine would get absolutely out of control. Several cables with quick-release catches would be better.

Hollow struts are now used, and various small matters of fittings have been improved. Altogether the machine strikes one as being as neat and workmanlike as anything yet produced.



**The Week-end at Hendon.**

The commencement of the Whitsun holidays at Hendon was not auspicious. Heavy clouds covered the sky early on Saturday afternoon, and the wind blew in gusts from 15 to 30 miles an hour, and sometimes more. As though the elements were not sufficiently discouraging to the general public—and it takes a good deal to keep some people away from Hendon—the tramway employees, with a cheerful disregard for the urgency of the national work carried on at the Aerodrome, and for the convenience of the public, went on strike. As no trams were running those persons who were hoping to reach the ground by way of Willesden Green or Cricklewood had the greatest difficulty, the motor-buses being quite inadequate for the purpose.

Those who persevered, together with those who were able to travel by car or taxi, were rewarded with an afternoon's excellent flying. The first pilot to ascend was Mr. Osipenko, on a 50-h.p. Grahame-White biplane, who showed what could be done in a strong wind. Mr. Manton, happily recovered from his illness, followed suit. These two pilots made several flights each during the afternoon, both with and without passengers.

Mr. Beaumann gave demonstrations on a 60-h.p. Caudron, on one occasion taking up a representative of THE AEROPLANE over 3,000 feet in a very short time, by way of showing the climbing capacity of this efficient machine. Mr. Virgilio was giving exhibitions of high spirits on a 50 Caudron. Having been formerly an officer in the Italian submarine service he is expecting daily to be ordered home, and is extremely anxious to serve his country in the air instead of under the water, a desire which will doubtless be gladly met.

Mr. Winter handled a Grahame-White biplane in the manner of an expert, and Mr. Roche-Kelly brought out a Beatty-Wright and provided plenty of interest for the spectators.

On Sunday the wind blew hard, and no flights were made. The natural disappointment of the crowd, however, was appeased by the generous distribution of tickets available for another occasion; a very sporting concession on the part of the Grahame-White Aviation Company, who were in no way responsible for the "frightfulness" of the weather.

On Monday the attendance ran into many thousands, and the various enclosures looked reminiscent of the days before the war. There was, unfortunately, what is officially described as "a certain liveliness" in the air, the wind blowing nearly 40 miles an hour all the afternoon. Mr. Osipenko made several plucky straight flights in a Grahame-White biplane, but evidently had an uncomfortable time.

Mr. Roche-Kelly, on a Beatty-Wright, flew twice across the aerodrome, but a strong downward current appeared to prevent him from getting any distance off the ground. At a third attempt he was more successful, but was compelled to alight in a field beyond the railway.

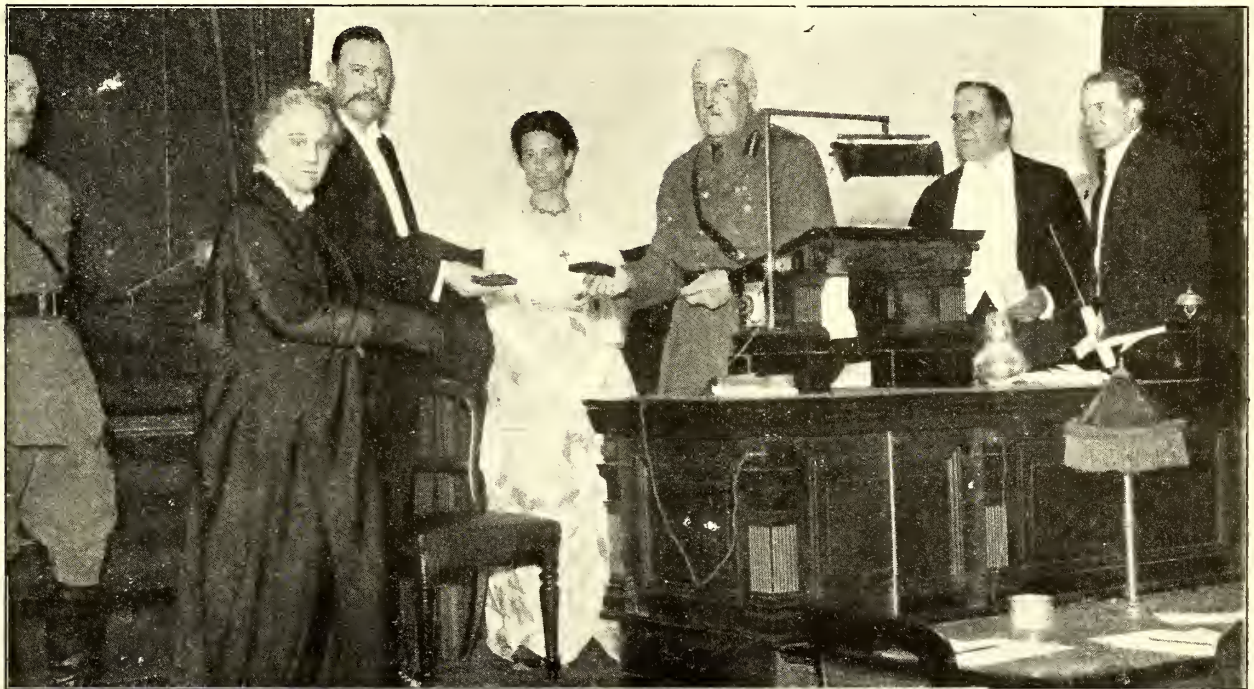
The crowd was greatly relieved later to hear that he and his machine were uninjured. As the tramway strike still prevailed, the large attendance was quite remarkable.

**An Aid to Acceleration.**

There are few people connected with the aeroplane industry who are not familiar with the name of the firm of T. W. K. Clarke and Co., Hampton Wick, Middlesex. Mr. T. W. K. Clarke, the founder of the firm, was one of the pioneers of propeller-making in this country, having made propellers and other parts for aeroplanes as far back as 1906, and he had a very comprehensive catalogue printed in 1911 of various aeronautical accessories of his own manufacture.

Certainly, a firm whose originators had the courage and foresight to enter the aeroplane industry in such a thorough manner at that early stage deserves all the support which can be extended to it, but apart altogether from any consideration of this sort, the firm are in a position to turn out the very best of work in either two or four-bladed propellers, and, furthermore, they are able to give exceptionally prompt deliveries, which is an important consideration at the present time.

Although a large proportion of their work at present is to Government specification, they are equipped to undertake additional work to suit any requirements. The firm's lengthy experience and reputation for turning out really first-class work should be borne in mind by those firms who require prompt delivery of propellers to assist them in accelerating their output of aeroplanes.



Maj. General R. M. Ruck, Chairman of the Aeronautical Society presenting the Society's Gold Medals to Mrs. Busk and Professor Bryan. On the right of the picture is Mr. Cooper, Secretary of the Society, and between him and General Ruck is Mr. Griffith Brewer, to whom the Wilbur Wright Memorial is chiefly due.



## FROM DENMARK.

THE AEROPLANE'S Danish correspondent sends the following news:—

"Flugsport" of April 21st contains the following casualty list:—Feldflieger Department, Oberlieut. von Cleef, missing; Oberlieut. Dyckhoff, died in French imprisonment; Lieut. Krüger, killed in fatal accident; Oberlieut. Baron von Gayl, slightly wounded, taken prisoner; Lieut. von Kaisenberg, died in French imprisonment; Lieut. Grosskopff, missing; Lieut. and Observer Dieterlev, missing; Officer-Replacer Welk, killed; Lieut. of the Reserve and Observer Wittenburg, missing; Vizefeldwebel Kissenbert, slightly wounded; Vizefeldwebel of the Reserve Hucke taken prisoner; Sub-Officer Rauhut, missing; Pilot Voluntary Sub-Officer of the Reserve Engelhorn, missing; Gefreiter Spachholz, missing; Pilot Gefreiter Lange, missing; Aviator Herzprung, died from illness.

\* \* \*

The Austrian Feldpilot Captain Philipp Ritter Blaschke, of Berlin-Vienna 1912 race fame (see THE AEROPLANE, page 41, January 13th, 1915), has been taken prisoner by the Russians.

\* \* \*

The following well-known civil aviators have been appointed "Feldpiloten" with military ranks: Lieutenant Audolf Stanger (who undertook the last flight before the surrendering of Przemyśl), Enseign Sparrmann (the Lohner arrow biplane pilot, the winner of the Schicht prize), Lieutenant Alois Stiploscheck (who has piloted the Jeanin steel-dove monoplane with success in Germany), Franz Malina (who was killed in the voluntary collision, forced by the Russian Flight-Lieutenant Andriewicz, fatal too to himself), Workmaster Josef Korper, Corporal Bela Takats and Enseign Bognt Burian.

\* \* \*

In the order of the squadron-commander at the Hanover air station four officers from the there-residing squadron started on an overland flight to Braunschweig recently to celebrate the birth of the second prince of the Duke Family in that way. In reaching the palace the observers dropped their telegrams of congratulation from a height of 6,000 feet, Duke Ernst August bringing them afterwards the heartiest thanks in the name of his wife.

\* \* \*

In a private cable from Berlin to Copenhagen now appears the first reliable report of the partaking of the Sikorsky giant biplanes in the war, the Germans having shot one down, thereby killing three men before the alighting of the giant. As the German marksmen are said to have an easy mark and the Sikorsky biplane is said to have manœuvred slow and bad, it has likely suffered from engine troubles.

\* \* \*

German newspapers from the Western front report thus of the prisoner making of Garros:—Towards seven o'clock two aeroplanes appeared at great height. The one was fired at by an aircraft gun and disappeared then. The other hostile aviator continued, when a railway train approached from North on the route Ingelmyster-Kortrijk. Scarcely had the aviator observed the train when he dived steep at almost sixty degrees from more than 6,000 feet to 120 feet. He banked sharp with almost vertical planes, dropping a bomb, which missed its mark however. When the aviator came within range, the rail defence guard opened the fire and sometimes the shooting distance was scarcely 300 feet. The aviator tried to escape, switched the engine on again and rose, still fired upon to a height of 2,100 feet. When suddenly the aeroplane started rolling, the engine stopped and the aviator glided down. The commander of the guard started a pursue at once. Having descended the aviator put his aeroplane to fire, fleeing into a farm. By and by the guard was joined by some horsemen, who went in seek of the aviator. The inhabitants declared at one voice that only one man had alighted from the aeroplane. Then the aviator was sighted behind a thick thorn-hedge. He tried to find another hiding-place, diving into a trench by the hedge; but here he was taken prisoner. The aviator was Garros. He told that his aeroplane had been hit by a projectile at a height of 2,100 feet, so that he was forced to descend.

A fresh German aerial war letter runs: On March 11th both of us two flight lieutenants K. and F. received the order to find out the fate of two Russian horse divisions. As a true observer, I think of nothing but the tactic position, that is the picture of the hostile troops in the country, where the Russian cavalry, the mercury of the army, can have hidden. We fly first in eastern direction to search the out-skirt of the big wood. Krasnopol is sighted, further Seyny and the army road to Mariampol and Sereje. Troops are marshing thereon; as long as they see the big dragon-fly their columns stand still, the foot soldiers lay themselves down across the road. I draw them down on my map and laugh. Your lying down does not help you. You cannot avoid my eyes, though I am sorry for your efforts. But nowhere I see the cavalry, which can indeed only hide in the wood; we fly along the road to S—, R—, M— over the glade by P— to the canal. Enough of troops, both walking, driving and shooting ones, only no horse division. Might they have ridden in the defiles? Let us fly once more across H— in the direction of S—. I lean over the fuselage, observe close through my telescope, in all the many every way running defiles and suddenly find them, to right of the road to G—; horse by horse do they stand in the north-east running defile. Let us bank, then along the defile dropping steel darts. The big bird inclines the right plane downwards, carries out a circle and flies vertical above the defile. Through banking we loose 100 metres of height, have altogether not exceeded 3,300 feet. Under many weather conditions the aeroplane shall not rise in spite of all efforts. The flechettes are dropped, ten little boxes, each containing 50 darts.

Scarcely has the last bunch fallen, when the number of revolutions drop from 1,400 to 600, that is the engine has practically stopped working. Caused by the seizing of the propeller humming K. turns his head, and we two glance for one moment each others in the face; in life and death we are connected. Below the end is lurking . . . imprisonment or the death from the enemy or in the tops of the trees. The decision must come in one minute. As observer I can do nothing. With the fists clenched and the eyebrows contracted we are caught by an impotent fury. Damned, into the hands of the Russians; now before having brought the report! We have greeted the Russians with bombs and flechettes; how will they greet us?

Those thoughts last only a fraction of a second; next moment we think "3,000 feet high: that means at highest a glide of seven kilometres." So still amidst above the wood, most likely we shall break our necks or limbs. Dead or alive into the hands of the Russians. One small but even very small chance of alighting with rather unhurt limbs, surrounded by the enemy. Another chance to descend in the glade of the S—.

The aviator has throttled the gas down, given the aeroplane a down-going movement by the lever to keep the speed. The needle of the altimeter is steady sinking. The engine gargles and gasps, while the wind turns the propeller. The left-hand grasps the accelerator, moves it once more, yet another time . . . God in heaven. The altimeter registers but 2,400 feet. Now . . . now the engine starts; we rise, we live.

There are our trenches; from second to second our hopes rise, the horrible loads are removed from our souls, till the first German trench lies below us and we shout by joy, the cry of joy of the youth to have gained life again. The engine misses still three times; yet we laugh thereby, for we are at home—the home of the bayonet below. . . In the evening we rest again in our warm little room in the Poland city and are both happy. I ly stretched out in my bed with the hands under my head and the war dog by my feet, in spite of the white sheet. By heaven, a white sheet! F. sits by the table, still a little pale; yet only exterior. In our hearts we are healthy and happy. Both of us; thinking of our dear ones at home and of the happenings of the day, and yet most of the effervescing and incomprehensible life. Fare well, dear friends and ask for a blew sky for to-morrow. Then we will rise again above the big green sea with the white islands and keep on a sharp outlook, we two, in life and death connected, Lieutenants F. and K. of His Majesty's Forces.



## Aero-motors: In Kind and Construction.—(Continued)

BY GEOFFREY de HOLDEN-STONE.

"If you were not who you are, who would you rather be if you couldn't help being, and how often?" is just one of those polite lunatic riddles that hold the key of great wisdom. Like all arresting thoughts, it makes you doubt all at once which side of the wall you really belong. It explains, in the fittest possible terms, civil lords, political lawyers, Chancery Lane colonels, and even the Royal Air-Graft Factory, beside a whole host of minor British marvels. It accounts equally for the principal boy and the obscene flapper; and, on the other hand, for Eitel Fritz. Its "how often" subtly divines the motives of a friend of mine, who always used to wish he had been born an adventuress after a bad week's racing. Yet its "couldn't help being" affords the wholesome reminder that you always have to take the fittings with the business. That is why, for instance, I would not change names with Mr. Aubrey Llewellyn Coventry Fell, not for all those extra shillings. If I couldn't help but had to, I had much rather be plain G. Hover, which would be no less expressive of one's personality on an ordinary sized card, instead of his somewhat bulky kind. Beside, it would mean taking on his job and his other troubles. It is quite bad enough to be a motorist, and try to live up to Coventry alone.

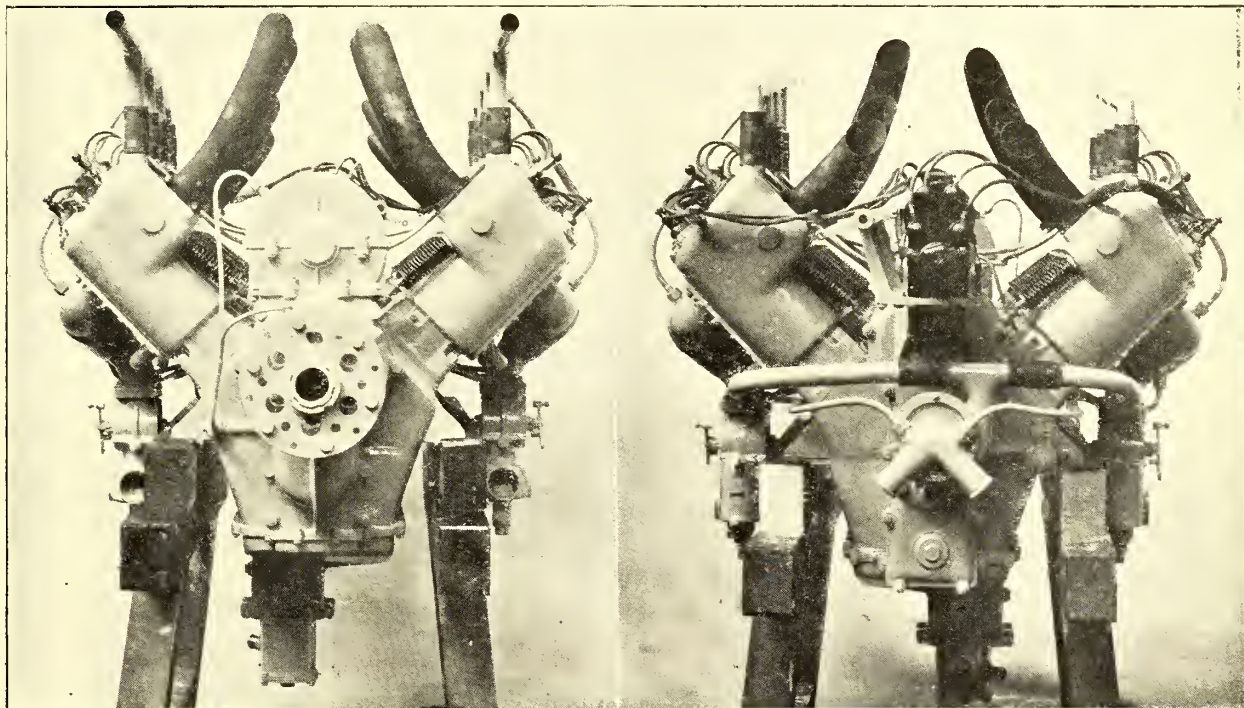
Speaking of which, the aforesaid riddle does so explain the "*plus ça change, plus ça y est même chose*" of the marvellous motor trade and all its works: than which there is no other like, nor ever will be. Civilisation could not stand for it. Honestly, did you ever go to an Olympia Show during the past seven years and see any real essential difference—apart from gadgets and minor what-nots—between any half-dozen cars of within fifty pounds of the same price that you could not have fully expressed in half a dozen lines of type? Or upon the road, to account for the three-page panegyrics? Frankly, I never have. From short stroke to long, or the other way, an axle or two, and sundry gear-change fittings make up the sum of it: and—as this car-resurrecting war is finding out—all the real difference between "a 1914 model" and its ancestress of 1907.

Likewise, did you even notice how like ninety-nine motors out of a hundred were to every other one but the hundredth, which was generally worth all the rest. As if—and this was the iniquity of it—they had all tried to be alike, encouraged thereto by the blasphemy of calling damned laziness and easy gadgeteering "commercial standardisation." And more than one Aero Show has chiefly shown that the aero industry might easily go to hell the same way if its few successful shopkeepers were not fortunately outnumbered by its original mad craftsmen.

Naturally, I am not for one moment denying the improvement of the type. My only objection is to its uniformity when there is so much scope for diversity, which is really the swifter road to progress, because there is no crowd. What I do maintain, on the other hand, is that all the serious improvement has arrived mainly, if not solely, by the frankly uncommercial way of racing. Brooklands has really done more for aviation with its track than with all the pet "remous" of its aerodrome; and the Circuits de Boulogne, Dieppe and Auvergne than all the subventions of Issy. There is nothing like the road-race, with its wrenchings, dwellings and heart-bursting speed-lifts, to bring out the secrets of designing a light-weight motor that can go through flight-stunts dependably without hiccuping. Curiously enough, one French firm that spends £50,000 a year on its racing factory alone, yet has never built for flight, possessed in its V-type racing monobloc the making of the finest aeromotor yet produced in that type. On the other hand, the merciless thrash of the track, at 2,000 r.p.m., and better all out, is like no other test for the material that has to stand the supreme question of flight. So for once in this world we win both ways, on racing.

### The Sunbeam-Coatalen Aircraft Motor.

That is why one may fairly allow that on its racing pedigree by road and track the Sunbeam aeromotor of either eight or a dozen cylinders ought to begin with at least thirty per cent. of its reliability-score in hand. From all accounts, too, it seems that the pudding-proof of performance amply fulfils this



End Views of the 150-H.P. 8-Cylinder Sunbeam-Coatalen Aircraft Motor.



expectation. It runs, and keeps on, which is nearly—say eighty per cent.—but not quite everything. The other twenty points we can discuss later. Otherwise, it is plain enough, certainly conventional of car-practice, in its design. So far, "Wolverhampton by name," yet not Wolverhampton by nature," for we may agree with the catalogue that it has been specially refined for its work aloft.

Now refinement, being one of those luminously vague port-manteau-words beloved of catalogue and show report carpenters, really means a great deal of which it definitely conveys very little. But since—in the essential matter of aeromotor trustworthiness—refinement of material and make-up counts far more than specially ingenious design—which is also refinement—the Sunbeam at least scores for service in the former respect.

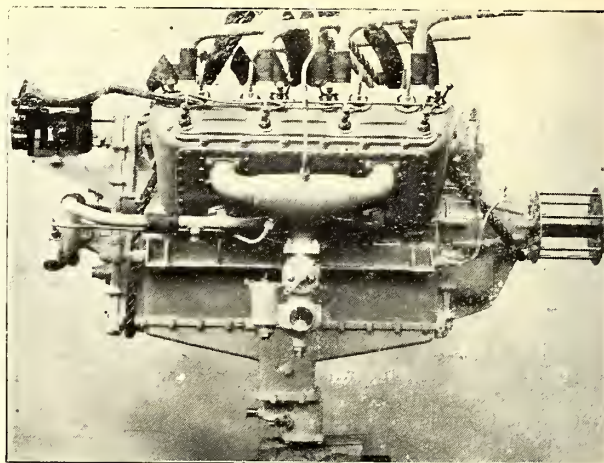
#### The 150-h.p. Eight-cylinder Model.

Taking the eight-cylinder 150-h.p. model, then, in the mass, we have the cylinders mounted in two mono bloc castings of four cylinders each, set V fashion at 90 deg. on the crank-chamber. For the best possible compromise between light-weight and trustworthiness—possible lubrication failure being a contingency always to be borne in mind—I prefer steel cylinders and pistons, with outsized cast-iron rings; and secondly either steel cylinders with cast-iron pistons or very naked cast-iron cylinders with steel pistons.

The Sunbeam aeromotors, I believe, belong to this last group. At any rate, the iron used in its cylinder castings is one of the best grades—it is like Brazilian—I have yet seen for dense, but light and thin formations with a large margin of strength. So, what with the copperlike density of grain, the water-jacket dimensions work out as thin as is safely possible: added to which the outer faces are cast open—the port-passages projecting of course—and panelled with aluminium plates, carrying the water-inlet leads.

Apart from the accurate gauging of cylinder thicknesses this open panelling assures, one of the most judicious points of this casting design is that each cylinder has its own separate water outlet—running up to a branched collector-pipe—instead of the single outlet for all four one usually sees in mono-bloc practice. I should add that the cylinders in each casting are staggered relatively to those opposite, so that the big ends of the opposed connecting rods may be side by side on each crank-throw; which in turn allows larger bearings to be fitted between the throws.

Now, the obvious intention of the Sunbeam design—as in



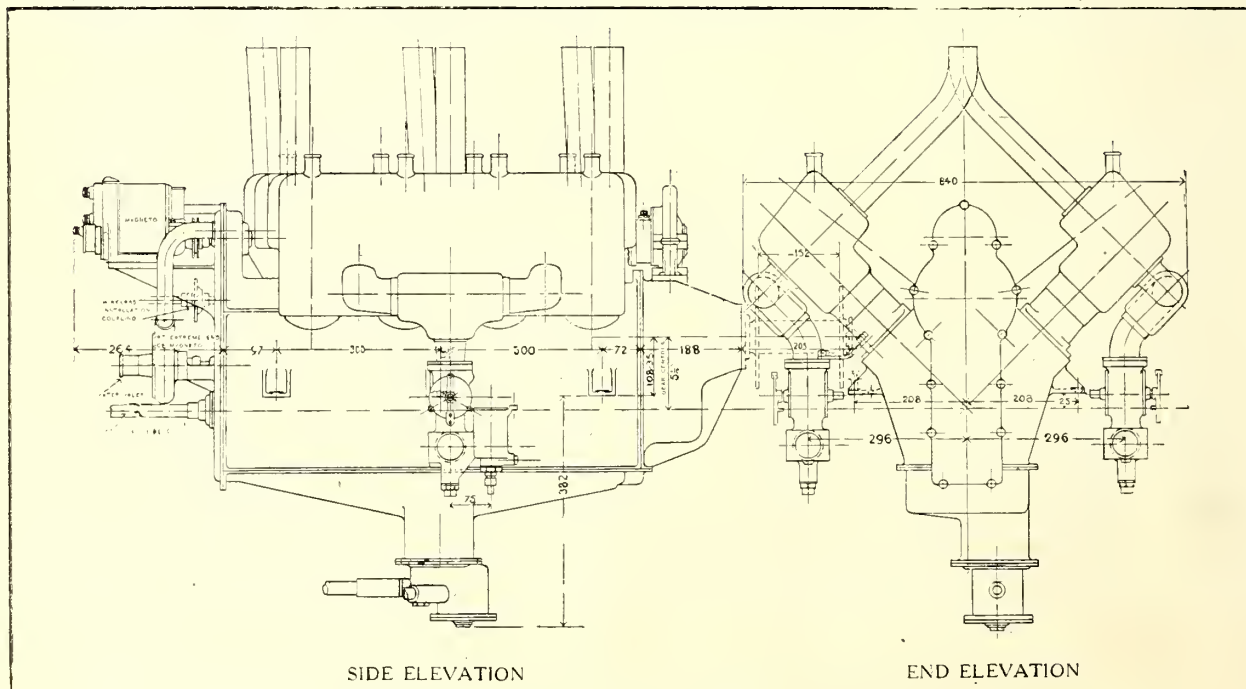
Side View of the 150-h.p. Sunbeam-Coatalen.

any V-type motor—is the time-honoured one of working all the valves from a single cam-shaft. Valve-adjustment, too, has probably been considered troublesome. Albeit the trouble is slight enough, and seldom recurs in any number of valve-dismountings. Thus, quite irrespective of other considerations, the immediate car-practice expedient has been employed, of forming a valve chest on the inner side of each casting, containing all the valves, and operating the whole sixteen direct from the cam-shaft. Carrying the induction passages through and across to the outer side in the familiar way certainly does warm the mixture usefully, making for economy of petrol and easy starting, although it gives the gas-stream an extra bend and a positive reverse into the cylinder. But, so far, the trustworthiness of the motor is not affected by any of these dispositions.

Nevertheless, quite frankly, I think we need not take the accepted fact, however clearly established its merits, as the final possibility. Criticism need not mean detraction thereof; and if suggestive, is useful; if only to add to the general stock of ideas.

#### The Ideal Exhaust.

So to begin with, we may well remember this, that the ideal for exhausting would be to have the entire cylinder-head lifting



like a saucepan lid, with a port-feeding induction below, if only mechanical conditions would allow. Unfortunately they do not. The Gnome monosoupape comes nearest in this respect at present; and further adaptations of the same system for other motors seem quite practicable. Even the *échappement anticipé*—of half a dozen four-strokers earlier than the J.A.P.—is only a variation of the same idea. However, one cannot begin to realise it without inverting the exhaust-valve direct into the cylinder-head.

#### The Writer's Theories.

Bearing in mind, too, that you hardly ever need to get at valve-gear at all; but only valves, and those as quickly as possible, without dismounting adjacent fixtures, the question to consider is whether four—or even eight—rockers and tappets would altogether weigh more than a valve-chest. Personally, I should say less than half as much. They would at least allow the valves to be placed at choice; in any case in the most accessible position on the top of the cylinders; which position, mark you, not only gives the easiest, most direct flow for the induction and exhaust, but wholly gets rid of dead combustion space, the notable defect of valve-chest design. Actually, too, very slight ovalising or minaretting of the combustion chamber enables larger valves to be used than there is room for in a valve-chest, never so lengthened. Which experience—ancient enough by this time—has proved to give better gas-delivery or relief and longer valve life. Withal, one just as certainly follows out the intention of valve operation from a single cam-shaft.

Further possibilities also readily occur. For instance—with the valves thus disposed, the inlets preferably on the inner side, what is to prevent a continuous induction passage being cast along the inner side instead of a valve-chest, and connected with the corresponding passage in the opposite cylinder battery, at the farther end by a curved tube, and at the near one by branches from a single carburettor, to form a complete induction hoop, and add ten per cent. to the motor's efficiency. This would leave all the middle space empty for accessible magnetos and the valve-gear. And with the outer side of the cylinder castings left clear as before, one could hardly get rid of the exhaust gases more directly, or more conveniently for aeroplane installation; as the double exhaust piping—Lion-Peugeot fashion—would be no inconvenience.

Something might be said, too, as to leading the incoming cooled water more directly around the exhaust valve-seatings.

Few considerations are more important than this in mere

touring-car design: so how much more so must it be for an aeromotor? Yet with inverted exhaust valves ranged along the outer side of a mono bloc casting-head, nothing would be easier than to take the water inlet tube direct to their seatings, with branch insertions into a panel below the exhausts; or nearer still, above them, right along the outermost edge, of the casting. For, be it remembered, so long as you cool the cylinder-heads and exhaust-valves effectively—the inlets almost cool themselves with the new mixture—there is no special need to cool the cylinder trunks further than the surrounding jacket-water does in any case. In fact, the motor seems better with the cylinder trunks kept fairly warm, to preserve the rapidly weakening power-stroke to the finish. Furthermore, they will not be liable to the sudden cooling after a long flight, that cracks cylinders far more readily than overheating.

#### Inherent Reliability.

All these digressive observations—all verified by performance quite as much as theory—merely show how doctors may differ and yet be right, each in his way. For the Sunbeam practice, as it happens, reverses these precepts of design in nearly every detail. Yet, running so notably well as the Sunbeam motors do, the supreme value of the material-and-workmanship factor is thus doubly proved.

Actually, running in as it does at the lowest point of the water-jacketing, the cooled water enters farthest from the valves. Yet with the hot water relief immediately above each pair, they do not overheat. At any rate, I understand that although most of the Sunbeam aeromotors built so far have been particularly hard worked, I have not heard of a single instance of valve-failure.

Of course, with the valve chest on the inner side, the exhaust passages could hardly be carried out any other way—certainly not more directly—than they are, to a central collector: so long as they are not left with open pipe-ends. They might conceivably change positions with the induction passages, to carry out the idea of working with an induction hoop and perhaps a single carburettor. But the experiment would be exceedingly risky on the score of overheating, because the exhaust gases would then be given a reverse turn downwards after an initial upward lead. And certainly the ignition plugs could not be better placed than as they are set centrally over each combustion chamber: and their range-line being practically on the outer edge, they are particularly accessible.

(To be continued.)

#### On the Roofing of Buildings.

Now that so much building, both permanent and temporary, is being done in connection with the aircraft industry, the question of roofing for buildings becomes of considerable importance, whether one is thinking of putting up a large factory for the building of aeroplanes, or whether one is merely putting up a small additional shop in a yard, or sheds, at an aerodrome.

A species of roofing which has been thoroughly tested and has stood up well to all its tests is the ROK roofing, manufactured by D. Anderson and Son, Ltd., of Belfast, a firm which also has a branch works at Roach Road, Old Ford, London, E.

The material itself is apparently a species of compressed felt finished with an exceedingly tough and durable surface somewhat of the nature of rubber. It is guaranteed to stand the most severe climatic conditions of the tropics, as well as the cold and damp of the British Isles. In hot weather it makes a much cooler roof than corrugated iron, and in cold weather it is warmer. It lasts longer, and water from roofs covered with ROK can be used for domestic purposes, as it does not taint the water as corrugated iron does. Furthermore, ROK roofing is fume and smoke proof, as it is not affected by acids from neighbouring works and chimneys. Moreover, it is proof against vermin, and in this way is superior to wood or to ordinary felt covering.

In these days it is of interest to note that ROK roofing is made by British labour and backed by British capital. The durability of the material is backed by the firm's guarantee based on 60 years' experience of the roofing trade.

It is important when using this material to follow up with

care the firm's directions for fixing. A friend of the writer's who has had many years' experience of the Gold Coast in an important Government position says that ROK roofing stands the heat and rains there better than anything else, but that some of the people on the Coast who have tried to use it have had considerable trouble with it, which they have blamed on the roofing, when the trouble was entirely due to their own slackness in not following out the firm's instructions. When the material is properly fixed it is perfectly waterproof and suitable for any form of roof.

#### "In the Clouds."

Special interest attaches to a play which is being produced by the celebrated Dutch actor, Mr. Henri de Vries, at the Euston during Whit week. Mr. de Vries, whose stage portrayal of a submarine will be remembered, has on this occasion put on a play dealing largely with aviation. It is from the pen of Mr. Leslie Stiles, and the chief scene in the play depicts a hand-to-hand fight in an aeroplane in mid-air. The machine is made to appear to be travelling at a rate of eighty miles an hour. Mr. de Vries describes his production as an "Egyptian Aerodrama," the scene being laid near the Pyramids.

Owing to the paper going to press at the beginning of the week, it has been impossible to see the play as yet, but if it is anything like as well done as Mr. de Vries' submarine show it is very good indeed. The present writer happened to be with a submarine officer when he saw the said submarine play, and this officer was quite astonished to find how near Mr. de Vries had got to the real thing. One hopes the aeroplane is equally true to life.



**New Pilots.**

As there appears to be no official recognition of any evil consequences which may result from the publication of the exact number of new pilots who take their certificates, and of the location of the various naval, military, and civilian schools at which their training has been done, the following list is given showing the pilots who have passed for their tickets since the last list was published:—

- 1103, Flight Sub-Lieut. Redford Henry Mulock, R.N.A.S. (Short biplane, Royal Naval Flying School, Eastchurch), March 9th, 1915; 1104, 2nd Lieut. Alan Mushet Morison, R.F.C. (Maurice Farman biplane, Military School, Brooklands), March 11th, 1915; 1105, Flight Sub-Lieut. Laurence Henry Forster Irving, R.N.A.S. (Grahame-White biplane), March 11th, 1915.
- 1106, Flight Sub-Lieut. Wilfred Henry Dunn, R.N.A.S. (Grahame-White biplane, Grahame-White School, Hendon), March 11th, 1915; 1107, Norman Hatfield Read (Maurice Farman biplane, Military School, Brooklands), March 11th, 1915; 1108, Flight Sub-Lieut. John Stanton Fleming Morrison, R.N.A.S. (Grahame-White biplane, Grahame-White School, Hendon), March 11th, 1915; 1109, Algernon John Insall (Maurice Farman biplane, Military School, Brooklands), March 12th, 1915; 1110, Gilbert Stuart Martin Insall (Maurice Farman biplane, Military School, Brooklands), March 14th, 1915.
- 1111, Flight Sub-Lieut. James Brian Patrick Ferrand, R.N.A.S. (Grahame-White biplane, Grahame-White School, Hendon), March 15th, 1915; 1112, Howard Lister Cooper (Maurice Farman biplane, Military School, Brooklands), March 15th, 1915; 1113, Flight Sub-Lieut. George Hancock Reid, R.N.A.S. (Grahame-White biplane, Grahame-White School, Hendon), March 15th, 1915; 1114, 2nd Lieut. Alexander Cecil Clarke, D.C.L.I. (Maurice Farman biplane, Royal Flying Corps, Farnborough), March 2nd, 1915; 1115, 2nd Lieut. John Ollis Mullins (6th Battn. Middlesex Regt.) (Maurice Farman biplane, Royal Flying Corps, Shoreham), March 13th, 1915.
- 1116, Flight Sub-Lieut. Charles William Fairfax Morgan, R.N.A.S. (Short biplane, Royal Naval Flying School, Eastchurch), March 14th, 1915; 1117, Preston Albert Watson (L. and P. biplane, London and Provincial School, Hendon), March 16th, 1915; 1118, William Jamieson McConnochie (Hall biplane, Hall School, Hendon), March 16th, 1915; 1119, Flight Sub-Lieut. Laurence Pratt Openshaw, R.N.A.S. (Bristol biplane, Royal Naval Air Station, Hendon), March 17th, 1915; 1120, 2nd Lieut. Ernest Leslie Gossage, R.F.A. (Maurice Farman biplane, R.F.C., South Harrow), March 10th, 1915.
- 1121, 2nd Lieut. Humphrey Minton Goode (County of London Yeomanry, Territorial Force) (Maurice Farman biplane, Royal Flying Corps, Farnborough), March 11th, 1915; 1122, Lieut. Ralph Towleton Leather (Warwickshire Yeomanry, Territorial Force) (Maurice Farman biplane, Royal Flying Corps, Shoreham), March 16th, 1915; 1123, Lieut. Lawrence Werner Wyld Lees, R.G.A. (S.R.) (Maurice Farman biplane, Royal Flying Corps, South Harrow), March 17th, 1915; 1124, Flight Sub-Lieut. Arthur Vere Tabor, R.N.A.S. (Bristol biplane, Royal Naval Air Station, Hendon), March 18th, 1915; 1125, William Geoffrey Cullen (Maurice Farman biplane, Military School, Brooklands), March 21st, 1915.
- 1126, Jean Claude Charles Marduel (French subject) (Caudron biplane, Richmond, N.S.W.), Jan. 16th, 1915; 1127, Lieut. Gerald Allen (The Connaught Rangers) (Maurice Farman biplane, Royal Flying Corps, Farnborough), March 11th, 1915; 1128, 2nd Lieut. William Reid (Maurice Farman biplane, Royal Flying Corps, Shoreham), March 16th, 1915; 1129 (hydro-aeroplane), Flight Com. Henry Meyrick Cave-Browne-Cave, R.N.A.S. (Short hydro-aeroplane, Royal Naval Air Station, Isle of Grain), March 20th, 1915; 1130, Lieut. Frederick James Powell (Manchester Regt.) (Maurice Farman biplane, Royal Flying Corps, Farnborough), March 2nd, 1915.
- 1131, Lieut. Francis Edgcombe Hellyer (The Hampshire Regt.) (Maurice Farman biplane, Royal Flying Corps, Farnborough), March 2nd, 1915; 1132, Flight Sub-Lieut. Robert Dymond Gladman Sibley, R.N.A.S. (Maurice Farman biplane, Royal Naval Flying School, Eastchurch), March 24th, 1915; 1133, Flight Sub-Lieut. John Findlay Hay, R.N.A.S. (Maurice Farman biplane, Royal Naval Flying School, Eastchurch), March 24th, 1915; 1134 Lieut. Colin Critchley Salmonson (R.M.

Fusiliers) (Maurice Farman biplane, Royal Flying Corps, Farnborough), March 25th, 1915; 1135, John Gay (Maurice Farman biplane, Military School, Brooklands, March 30th, 1915.

1136, Arthur Claude Wright (Maurice Farman biplane, Military School, Brooklands), March 30th, 1915; 1137, Capt. John Glanville Hearson, R.E. (Maurice Farman biplane, Royal Flying Corps, Farnborough), March 11th, 1915; 1138, Flight Sub-Lieut. Arthur Connorton Saw, R.N.A.S. (Short biplane, Royal Naval Flying School, Eastchurch), March 29th, 1915; 1139, 2nd Lieut. Cecil St. George Lyster-Smythe (1st East Surrey Regt.), (Maurice Farman biplane, Military School, Farnborough), March 20th, 1915; 1140, Capt. Reginald Alfred Cooper (Hampshire Yeomanry), (Maurice Farman biplane, Military School, Farnborough), March 31st, 1915.

1141 2nd Lieut. Ian Woodford Aitken (13th Reserve Regiment of Cavalry) (Maurice Farman biplane, Military school, Farnborough), March 31st, 1915; 1142 Flight Sub-Lieut. Frederick George Darby Hards, R.N.A.S. (Grahame-White biplane, Grahame-White School, Hendon), March 31st, 1915; 1143 George Lockhart Piercy Henderson (L. and P. biplane, London and Provincial School, Hendon), March 31st, 1915; 1144 Charles James Chabot (Maurice Farman biplane, Military School, Brooklands), April 1st, 1915; 1145 2nd Lieut. Charles Osborne Fairbairn (Loyal North Lancashire Regt.), (L. and P. biplane, Hendon), April 2nd, 1915.

1146 Leonard Wright Learmount (Maurice Farman biplane, Military School, Brooklands), April 2nd, 1915; 1147 Flight Sub-Lieut. Cuthbert Everard Brisley, R.N.A.S. (Bristol biplane, Royal Naval Air Station, Hendon), April 4th, 1915; 1148, Gerrit Forbes (Wright biplane, Beatty School, Hendon), April 5th, 1915; 1149, Lieut. Edgar Francis Wanklyn Colbold (7th Cheshire T.F.), (Maurice Farman biplane, Central Flying School, Upavon), Feb. 9th, 1915; 1150 2nd Lieut. Frederick Howard Jenkins, R.F.C. (Maurice Farman biplane, Royal Flying Corps, Shoreham), Feb. 26th, 1915.

1151 Lieut. Henry Anthony Patrick Disney (Cambridgeshire Regt.), (Maurice Farman biplane, Royal Flying Corps, Shoreham), March 15th, 1915; 1152 2nd Lieut. Percy B. Brown (South Staffordshire Regt.) (Maurice Farman biplane, Royal Flying School, Shoreham), March 17th, 1915; 1153, Francis Reynell Laver (Beatty biplane, Beatty School, Hendon), March 24th, 1915; 1154, Lieut. the Hon. Laurence John Evelyn T-Wykeham-Fiennes (4th Battn. Oxford and Bucks Light Infantry) (Maurice Farman biplane, Military School, Farnborough), March 29th, 1915; 1155 2nd Lieut. Alan Victor Hobbs, R.F.C. (Maurice Farman biplane, Royal Flying Corps, Shoreham), April 2nd, 1915.

1156, Alfred Sebastian Goodwin (L. and P. biplane, London and Provincial School, Hendon), April 5th, 1915; 1157 Alan Fitzroy Somerset-Leeke (Maurice Farman biplane, Military School, Brooklands), April 5th, 1915; 1158, 2nd Lieut. Vere Carol Melvill Gonne, R.G.A. (S.R.), (Maurice Farman biplane, Royal Flying Corps, South Harrow), April 5th, 1915; 1159 Assistant Paymaster Lionel Douglas Dalzell-McKean, R.N. (Bristol biplane, Royal Naval Air Station, Hendon), April 10th, 1915; 1160 Flight Sub-Lieut. Robin Gordon Mack, R.N.A.S. (Grahame-White biplane, Grahame-White School, Hendon), April 11th, 1915; 1161, Flight Sub-Lieut. George Hind Jackson, R.N.A.S. (Grahame-White biplane, Grahame-White School, Hendon), April 11th, 1915; 1162, Henry Edward Van Geothem (Maurice Farman biplane, Military School, Brooklands), April 12th, 1915; 1163, Flight Sub-Lieut. Francis Joseph Bailey, R.N.A.S. (Bristol biplane, Royal Naval Air Station, Hendon), April 12th, 1915; 1164, 2nd Lieut. Alan Murray Waistell (4th Royal Warwickshire Regt.), (Maurice Farman biplane, Military School, Farnborough), March 24th, 1915; 1165, Flight Sub-Lieut. Colin Johnson, R.N.A.S. (Bristol biplane, R.N. Air Station, Eastbourne), April 11th, 1915.

1166, Flight Sub-Lieut. Cyril Tollemache, R.N.A.S. (Bristol biplane, Royal Naval Air Station, Eastbourne), April 11th, 1915; 1167, Flight Sub-Lieut. Arthur Charles Teesdale, R.N.A.S. (Short biplane, Royal Naval Flying School, Eastchurch), April 12th, 1915; 1168, Flight Sub-Lieut. William Henry Wood, R.N.A.S. (Short biplane, Royal Naval Flying School, Eastchurch), April 12th, 1915; 1169 Commander Frederick Crosby Halahan, R.N. (Maurice Farman biplane, Royal



Naval Air Station, Hendon), April 12th, 1915; 1170, Flight Sub-Lieut. Benjamin Travers, R.N.A.S. (Bristol biplane, Royal Naval Air Station, Hendon), April 12th, 1915.

1171, Kelham Kirk Horn (Maurice Farman biplane, Military School, Brooklands), April 15th, 1915; 1172, Flight Sub-Lieut. Francis Joseph Edward Feery, R.N.A.S. (Grahame-White biplane, Grahame-White School, Hendon), April 15th, 1915; 1173, 1st Class Air Mechanic George Leslie Haydon, R.F.C. (Caudron biplane, Ruffy-Baumann School, Hendon), April 15th, 1915; 1174, Flight Sub-Lieut. George Turner Cain, R.N.A.S. (Bristol biplane, Royal Naval Air Station, Eastbourne), April 15th, 1915; 1175, 2nd Lieut. John Charles Quinnell, R.H. and R.F.A. (M.F. biplane, Shoreham), March 23rd, 1915.

1176, Lord Hugh Cecil (Maurice Farman biplane, Military School, Shoreham), April 10th, 1915; 1177, Lieut. Wayland Joyce (Bedfordshire Regt.), (Maurice Farman biplane, Royal Flying Corps, South Harrow), April 12th, 1915; 1178, 2nd Lieut. David Samuel Jillings (Maurice Farman biplane, Military School, Shoreham), April 15th, 1915; 1179, Darrell Brodie James (Maurice Farman biplane, Military School, Brooklands), April 19th, 1915; 1180, Flight Sub-Lieut. Thomas Francis Nettenville Gerrard, R.N.A.S. (Bristol biplane, Royal Naval Air Station, Hendon), April 11th, 1915.

1181, 2nd Lieut. the Hon. Oscar Montague Guest (Lothians

and Border Horse), (Maurice Farman biplane, Central Flying School, Upavon), April 14th, 1915; 1182, Lieut. Reginald Arthur Saunders, R.F.A. (Maurice Farman biplane, Military School, Shoreham), April 16th, 1915; 1183, 2nd Lieut. Percival George Arthur Harvey (Maurice Farman biplane, Military School, Shoreham), April 19th, 1915; 1184, John Percy Claude Sewell (Maurice Farman biplane, Military School, Brooklands), April 21st, 1915; 1185, Charles Cleaver Miles (Maurice Farman biplane, Military School, Brooklands), April 21st, 1915.

1186, Flight Sub-Lieut. Reginald Marsh Everett, R.N.A.S. (Bristol biplane, Royal Naval Air Station, Eastbourne), April 21st, 1915; 1187, Lieut. Douglas Maitland King (18th Hussars) (Reserve of Officers) (Maurice Farman biplane, Military School, Brooklands), April 22nd, 1915; 1188, Flight Sub-Lieut. John Forgan Potts, R.N.A.S. (Grahame-White biplane, Grahame-White School, Hendon), April 22nd, 1915; 1189, Frederick Hugh Lincoln (L. and P. biplane, London and Provincial School, Hendon), April 22nd, 1915; 1190, Robert Gordon Gould (L. and P. biplane, Hendon), April 24th, 1915.

1191, 2nd Lieut. Charles d'Arcy Edmund Wentworth Reeve (Suffolk Regt.) (Maurice Farman biplane, Military School, Farnborough), April 24th, 1915; 1192, Flight Sub-Lieut. Charles Vernon Arnold, R.N.A.S. (Short biplane, Royal Naval Flying School, Eastchurch), April 19th, 1915; 1193, Flight Sub-Lieut. Grahame George Dawson, R.N.A.S. (Short biplane,

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1196, Lieut. George Osborn Hayne (Maurice Farman biplane, Military School, Shoreham), April 11th, 1915; 1197, 2nd Lieut. Francis Leopold Mond, R.F.A. (T.F.), (Maurice Farman biplane, Military School, Farnborough), April 22nd, 1915; 1198, Lieut. Alistair Somervail (King's Own Scottish Borderers) (Maurice Farman biplane, Military School, Farnborough), April 24th, 1915; 1199, 2nd Lieut. Charles Kennedy Cochran-Patrick (Maurice Farman biplane, Military School, Farnborough), April 27th, 1915; 1200, Flight Sub-Lieut. Arthur Frederick Foy Jacob, R.N.A.S. (Grahame-White biplane, Grahame-White School, Hendon), April 29th, 1915.

1201, Donald Alastair Leslie Davidson (Maurice Farman biplane, Military School, Brooklands), April 30th, 1915; 1202, Joseph Alan Howard Crook (L. and P. biplane, London and Provincial School, Hendon), April 30th, 1915; 1203, Lieut. James Bird, R.N.V.R. (Maurice Farman biplane, Royal Naval Air Station, Hendon), April 30th, 1915; 1204, Henry Frederick Stevens (Hall biplane, Hall School, Hendon), April 30th, 1915; 1205, Alan Carnegie Horsburgh (Maurice Farman biplane, Military School, Brooklands), April 30th, 1915.

1206, 2nd Lieutenant Nigel James Bengough (Fife and Forfar Yeomanry) (Maurice Farman biplane, Military School, Brooklands), April 30th, 1915; 1207, Capt. James Dalton Dinneen (New Zealand Territorials) (Maurice Farman biplane, Military School, Brooklands), April 30th, 1915; 1208, James Percy Carré Cooper (Beatty-Wright biplane, Beatty School, Hendon), April 30th, 1915; 1209, Valentine Mason Grantham (Maurice Farman biplane, Military School, Brooklands), May 1st, 1915; 1210, John Radleigh Gore-Browne (Maurice Farman biplane, Military School, Brooklands), May 1st, 1915.

1211, 2nd Lieut. Horace Scott Shield (Durham Light Infantry) (Maurice Farman biplane, Military School, Farnborough), May 2nd, 1915; 1212, Flight Sub-Lieut. John Turner Bone, R.N.A.S. (Grahame-White biplane, Grahame-White School, Hendon), May 5th, 1915; 1213, Walter Dorling Smiles (L. and P. biplane, London and Provincial School, Hendon), May 5th, 1915; 1214, Flight Sub-Lieut. Harold Spencer Kerby, R.N.A.S. (Grahame-White biplane, Grahame-White School, Hendon), May 5th, 1915; 1215, Yin Khean Leong (Chinese Subject) (Beatty-Wright biplane, Hendon), May 5th, 1915.

1216, John Arthur Watson Bourne (Maurice Farman biplane, Military School, Brooklands), May 6th, 1915; 1217, Lieut. John Beverley Robinson (Governor General's Body Guard, Canada) (Maurice Farman biplane, Military School, Brook-

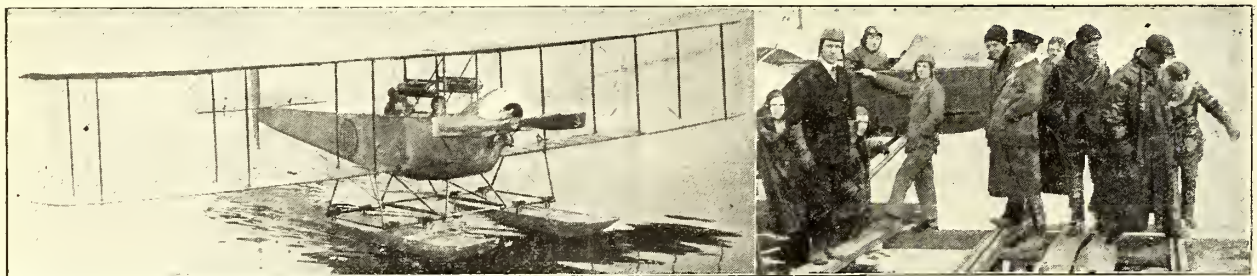
lands), May 6th, 1915; 1218, 2nd Lieut. William Sugden-Wilson (West Somerset Yeomanry, T.F.) (Maurice Farman biplane, Military School, Farnborough), April 22nd, 1915; 1219, Lieut. Robert Arthur Chalmers, R.N.V.R. (Short biplane, Royal Naval Flying School, Eastchurch), April 30th, 1915; 1220, Flight Sub-Lieut. Frank Fowler, R.N.A.S. (Bristol biplane, R.N. Air Station, Eastbourne), April 30th, 1915.

1221, Flight Sub-Lieut. Roy Bingley Pullin, R.N.A.S. (Short biplane, Royal Naval Flying School, Eastchurch), May 1st, 1915; 1222, Reginald Watson Kenworthy (Caudron biplane, Ruffy-Baumann School, Hendon), May 4th, 1915; 1223, 2nd Lieut. Guthbert Ambrose Anthony Hiatt (2nd Batt. Norfolk Regt.) (Maurice Farman biplane, Military School, Shoreham), May 5th, 1915; 1224, 2nd Lieut. Harold Foster Moore, A.S.C. (Maurice Farman biplane, Military School, Farnborough), May 10th, 1915; 1225, 2nd Lieut. Thomas Smith Impey, R.F.A. (M.F. biplane, Farnborough), May 11th, 1915.

1226, Lieut. William Dickson Long, A.S.C. (Maurice Farman biplane, Military School, Shoreham), May 6th, 1915; 1227, Douglas Archibald Colquhoun Symington (Maurice Farman biplane, Military School, Brooklands), May 11th, 1915; 1228, John Gordon McEwan (Maurice Farman biplane, Military School, Brooklands), May 11th, 1915; 1229, Harold Jackson (Caudron biplane, Ruffy-Baumann School, Hendon), May 11th, 1915; 1230, 2nd Lieut. Ralph Imray Kirton (King's Own Scottish Borderers) (Maurice Farman biplane, Military School, Farnborough), May 11th, 1915.

1231, 2nd Lieut. Herbert Thomas Kemp (Cheshire Regiment) (Maurice Farman biplane, Military School, Farnborough), May 11th, 1915; 1232, Flight Sub-Lieut. Frank Hartley Aspdon, R.N.A.S. (Bristol biplane, Royal Naval Air Station, Eastbourne), May 11th, 1915; 1233, Flight Sub-Lieut. John Patrick Coleman, R.N.A.S. (Grahame-White biplane, Grahame-White School, Hendon), May 12th, 1915; 1234, Flight Sub-Lieut. John Francis Roche, R.N.A.S. (Beatty-Wright biplane, Beatty School, Hendon), May 12th, 1915; 1235, Esca Houghton Colman (Maurice Farman biplane, Military School, Brooklands), May 14th, 1915.

1236, Lieut. Ewen Cameron Bruce (Maurice Farman biplane, Military School, Farnborough), March 25th, 1915; 1237, Capt. Robert Anstruther Bradley (1st Battn. North Stafford Regt.), (Maurice Farman biplane, Military School, Shoreham), May 12th, 1915; 1238, Flight Sub-Lieut. Edward James Poynter Burling, R.N.A.S. (Grahame-White biplane, Grahame-White School, Hendon), May 14th, 1915; 1239, Percival Victor Fraser (Wright biplane, Beatty School, Hendon), May 14th, 1915; 1240, 2nd Lieut. Oswald Stanley Mosley Leigh (Maurice Farman biplane, Military School, Farnborough), May 15th, 1915; 1241, William Thomas Lloyd Alcock (Beatty-Wright biplane, Beatty School, Hendon), May 16th, 1915.



The Avro Tractor Waterplane at the Northern Aircraft School at Windermere and some of the School crew on the landing stage.

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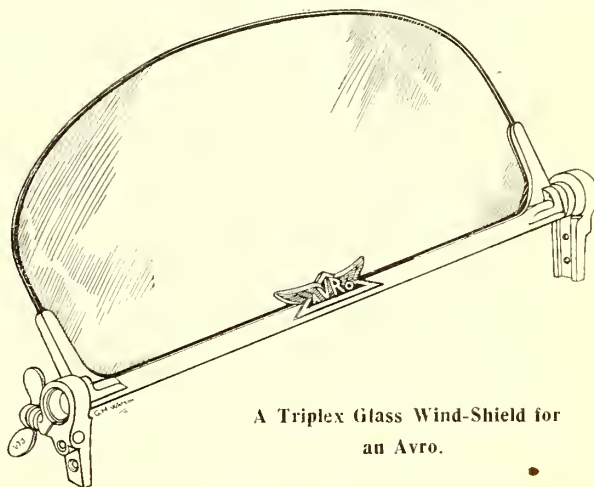
Phone: KINGSBURY 142.

From the above list, which has been already published officially in small instalments, it may be gathered that there are Military Schools at Shoreham and South Harrow, and Naval Air Stations at Eastbourne and Hendon. Facts not very generally known.

### The Uses of Triplex Glass.

The efficacy of Triplex Glass for goggles has already been frequently emphasised in this paper, but the aviator will find Triplex Glass of the greatest use for other purposes. Two of these are illustrated in this column.

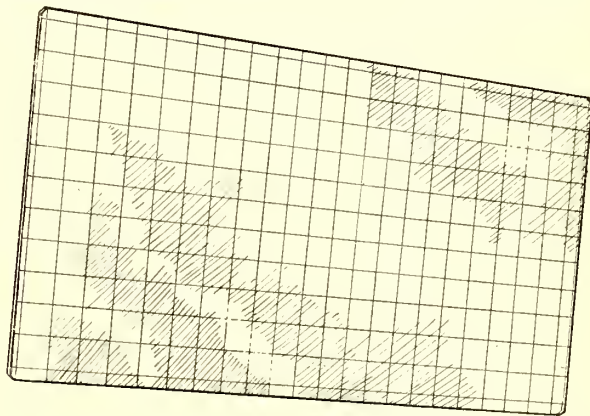
The wind-shield shown is designed for a standard fitting on an Avro biplane. It has the obvious advantage that it does not



A Triplex Glass Wind-Shield for  
an Avro.

cloud and become dull or crack as do all talc and celluloid shields, and in any accident which the pilot can possibly survive it will not splinter or break.

The "chess-board" illustration shows a special sheet of glass divided into squares to suit the scale of the particular maps



with which it is intended to be used in a map-case. Here again glass has the advantage over any other transparent substance, in that it does not become semi-opaque with age.

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Mr. A. J. Wallace Barr is wearing an appearance of contentment in these days, from which one may deduce the fact that the demand for Cellon meets with his complete approval. A representative of THE AEROPLANE who called at his office in the City learned that the output for this famous dope had more than quadrupled since the outbreak of war, while fresh additions were continually being made to the plant and machinery in order to fulfil the many large contracts, Government and otherwise, necessitated by the unprecedented activity in the aeroplane industry.

This is eloquent testimony, both to the well-established merits of Cellon, which has contributed its share to the efficiency of countless machines now on active service, and to the business abilities of Mr. Wallace Barr himself.



## MISCELLANEOUS ADVERTISEMENTS

## PATENTS.

The owner of British Patent No. 11,355 of 1910, entitled "Improvements in Aeroplanes," is desirous of disposing of the patent or entering into working arrangements, under license or otherwise, with firms likely to be interested in the same. A copy of the patent specification and full particulars can be obtained from and offers made (for transmission to the owner) to Marks & Clerk, 57 & 58, Lincoln's Inn Fields, London, W.C.

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**P**ATENTS; trade marks; inventors advised free.—King's Patent Agency, Ltd., 165, Queen Victoria Street, London. 28 years' references.

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## Icarus Reincarnated.

"I am afraid I used strong language, but I made the prisoner comfortable with blankets and gave him some warm drink," said Mr. A. Davey, of the Royal Naval Air Service, in describing to the Ascot magistrates yesterday how he found a man lying in the grounds of Bodenside, Winkfield, with a fractured leg.

The evidence showed that the prisoner, an ex-convict on licence, had endeavoured to enter the lodge but had fallen over the terrace. The man was sent for trial.

## "Photography in Five Lessons."

For many years it has been the custom of Burroughs, Wellcome and Co. to issue a new photographic booklet at the commencement of what may be called the photographic season. The standard they have set in these publications has been so high that the demand has been phenomenal, and it is always a matter of wonder that even this enterprising firm can continue to maintain the excellence of previous booklets each year.

The present booklet is unique in many respects. It attempts what at first might be thought an impossible task—namely, to teach photography, from exposing the negative to finishing the print, in five short chapters, no one of which occupies more than six small pages. And yet it succeeds in a wonderful way. The illustrations are, as usual, of high quality, and are not mere decorations. They really illustrate and explain points dealt with in the press.

A copy of "Photography in Five Lessons" will be sent gratis and post free to anyone mentioning this paper. Address, Burroughs, Wellcome and Co., Snow Hill Buildings, London, E.C.

## School and Weather Reports.


	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
East Coast ...	Wet, a.m. Fine p.m.	Rain	Fine	Fine	Fine	Fine	Fine & Wind
Hendon ...	Windy	Windy	Fair	Foggy	Fair	Windy	Windy

**Hendon.**—AT THE RUFFY-BAUMANN SCHOOL.—Instructors: Messrs. Baumann, James Bros., Virgilio and Winchester. Pupils: Messrs. May and Robertson on 60-h.p. Caudron with Mr. Baumann. On Wednesday, Thursday, Friday and Saturday, Mr. Robertson doing exceptionally well for new pupil and should make good aviator. On Wednesday Mr. Hubbard out for extra practice as well as Mr. Fleming. Two passengers taken for long flights by M. Ed. Baumann. Lieuts. Broughton and Blandy 20 and 15 minutes on 45 Caudron. Thursday: Messrs. England, Hudson, Sykes and Hubbard all out on 45 and 50 Caudron, doing well. Friday: Mr. Cole doing excellently on 45 and 50, Sykes and England considerable practice. Messrs. Robertson and May with instructor on 50 and 60 Caudron for high and long flights. Saturday: Although much wind prevailed on Saturday Mr. Baumann ascended with passengers on the Ruffy-Baumann machine, and Mr. Virgilio performed his usual artistic manoeuvres on the 50-h.p. Caudron to the delight of the onlookers.

**AT THE LONDON AND PROVINCIAL SCHOOL.**—Instructors: Messrs. M. G. Smiles, W. T. Warren, J. H. Moore and W. D. Smiles. Pupils with instr.: Mr. Bell. Starts, or rolling: Messrs. Turner, Tranchomme, Redgrave Gunner, Irwing and Wattine. 8's alone: Mr. Allen. Certificate was taken during the week by Mr. P. G. Allen, who passed in excellent style after three weeks' tuition in very poor flying weather. Machines: Three L. and P. tractor biplanes.

**AT THE HALL SCHOOL.**—Owing to the bad weather during early part of week no School work was possible. On Thursday morning the following pupils received instruction: Messrs. Snowdon (8 mins.), Snook (7), Millbourne (9), Hamer (12), Booker (12) and Bayley (10). And in the evening the pupils doing rolling practice were: Messrs. Snook (7), Hamer (9), Mason (7), Scott (11), Booker (12), Hatchman (12) and Snowdon (10). On Friday: Messrs. Snook (6), Snowdon (6), Millbourne (12), Hatchman (11), Russell (16), Snook (4), Bayley (12), Mitchell (12) and Booker (10) were out. Instructor for the week: Mr. H. F. Stevens. Machines: Hall tractor biplanes.

## PHOTOGRAPHS. PILOT PORTRAITS

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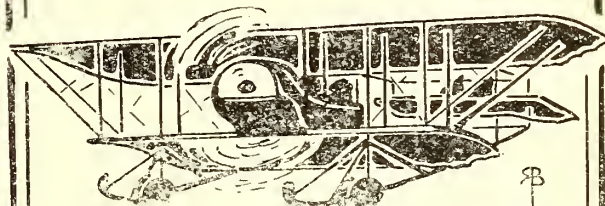


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"THE AEROPLANE," JUNE 2, 1915.

# THE AEROPLANE

*Edited by C. G. GREY. ("Aero-Amateur")*

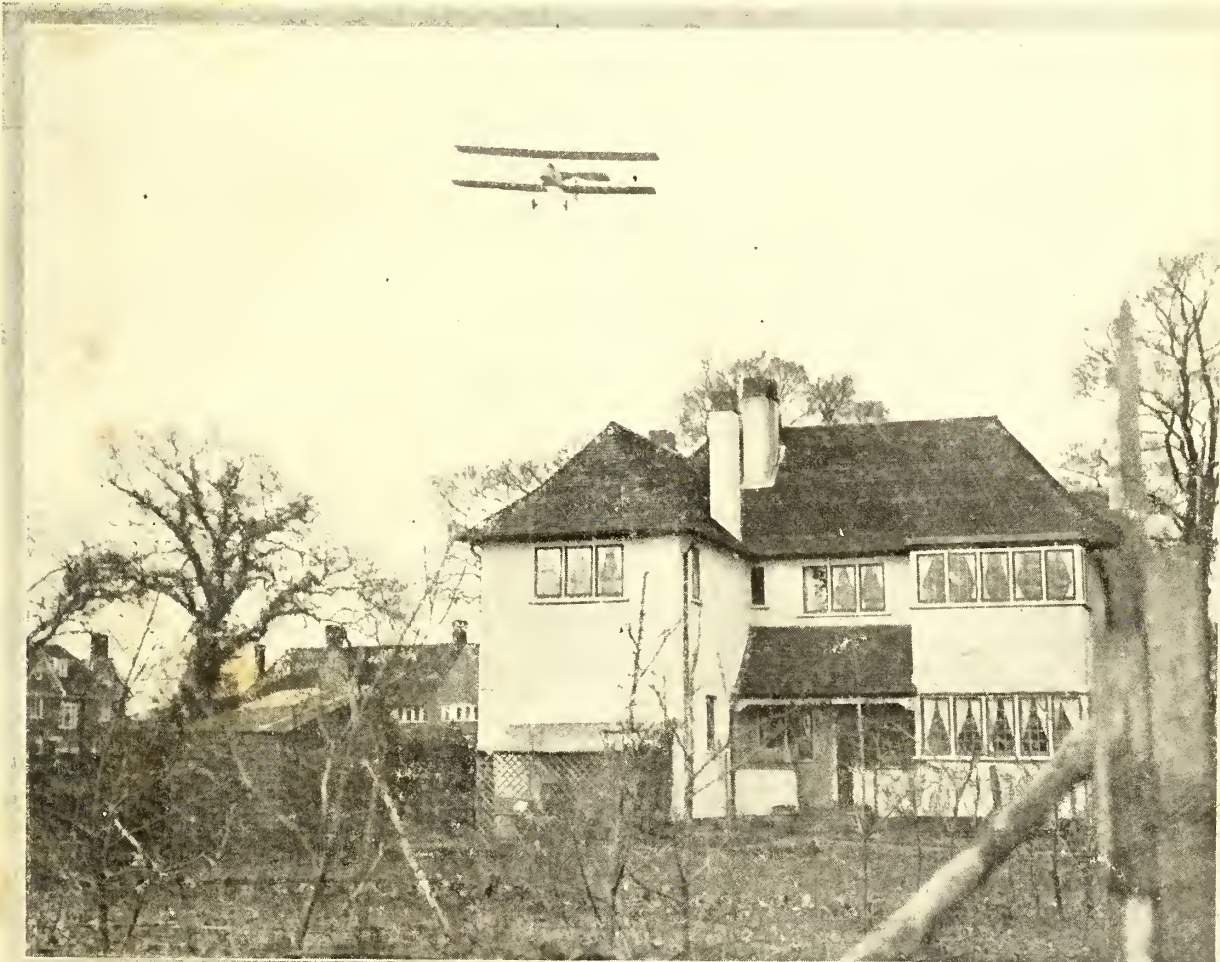


VOL. VIII. [REGISTERED AT THE G.P.O.  
AS A NEWSPAPER.]

WEDNESDAY, JUNE 2, 1915.

No. 22

## CHIMNEY-SWEEPING.



A Vickers Gun-carrier passing over the country residence of its pilot near Brooklands.





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## On Arms and Services.

Various and sundry people who write about aeronautical matters without comprehending the constitution or work of the King's armed forces seem to be trying to revive the old foolish idea of a separate Air Service, distinct from the Navy and the Army, with an Air Minister in charge. They argue that aircraft are not a mere Arm, but something in some mysterious way entirely different and superior.

It would be equally sensible to suggest a Ministry of Automobilmism to control all the Navy's armoured cars, transport wagons, motor boats, submarines, and portable wireless plant, as well as the Army's mechanical transport, staff cars, motor-cycles, and so forth and so on, just because they all happen to be driven by internal combustion engines.

Aeroplanes and airships are simply new vehicles, differing only from land-going automobiles in that they operate in a third dimension. In other ways they do not differ from any other means of locomotion used by the Services. The work they and their pilots and their passengers do is an integral part of the work of the Service to which they belong, and must be subsidiary or auxiliary to the work of the other units of that Service.

If Naval aircraft operate ashore they should, if they are to be of any real value, work in conjunction with the Army, and under the orders of the G.O.C.-in-Chief, just as the R.N. division in the Dardanelles is merely there to do the work of infantry. On the other hand there is never any likelihood of Army aircraft working at sea with the Fleet, though they may assist in coast defence, just as the Garrison Gunners may do, or as the old Submarine Miners (R.E.) used to do.

The link between the Royal Naval Air Service and the Royal Flying Corps can never be closer than that at present existing between the Navy and the Army, if each of the Flying Services is to remain efficient, and, for the same reason, a Ministry of the Air is as impossible a thing as would be a Ministry of Artillery, or, as already suggested, a Ministry of Automobilmism.

### A Possible Department of Aerial Communications.

I would, however, make this distinct reservation, that when in the dim and distant future peace breaks out, and internal dissensions begin, it may be necessary to have a Minister of Aerial Communications, for purely civil purposes, whose duties would be analogous to those of the French Minister of "Ponts et Chaussées," or of our own Postmaster-General, or of a possible Minister of Railways—which we shall also have.

But such a Minister would have nothing whatever to do with the aircraft of the Navy or Army. He would control civil aerodromes, look after pilots' certificates—which would entail the ability to fly properly—he would see to the licensing of aircraft, he, or, rather, his myrmidons, would inspect aircraft with an eye to their fitness to be trusted over the heads of the terrestrial population, and so forth. Which looks like providing a comfortable job in the future for Lieut.-Commander Harold Perrin, R.N.V.R., now of the Armoured Car Division, as permanent Under-Secretary for such a department, for he would be just the man to teach each successive Minister his job.

Nevertheless, that has nothing to do with the absurd

dream—or, rather, nightmare—of a separate Air Service.

### What is a Service?

It may, perhaps, be well to distinguish clearly between an Arm and a Service. The two great Services are, of course, the Navy and the Army, and subdivisions of these may perhaps be called separate Services, just as the Navy has the Submarine Service and the Royal Naval Air Service. The Army, on the other hand, apparently prefers to call its separate branches Corps, as in the case of the Royal Flying Corps, the Army Service Corps, and the Corps of Royal Engineers, though, in fact, each of these various Corps are quite as much Services as is the Royal Naval Air Service.

The real distinction apparently between an Arm and a Service is that an Arm operates in conjunction with another Arm of the same Service, as aircraft and Cavalry work as scouts for the Main Army, or as Aircraft observe artillery fire, whereas a separate Service conducts its own manoeuvres "in its own damn tinker fashion"—as the Admiral remarked to Mr. Kipling's friend, Mr. Moorshed, Sub-Lieut., R.N.—and according to its own rules, just as the Army operates separately from the Fleet.

Two Services may co-operate as the Navy and Army are co-operating at the Dardanelles, and sections of one Service may co-operate with another Service just as the Naval Brigade co-operated with the Army in the Khartoum Expedition, and as detachments of the Royal Naval Air Service are—more or less—co-operating with the Army at present.

In a general way it may be taken that a Service shall be able to conduct operations on its own account without assistance from or co-operation with any other Service.

Admitting this hypothesis, it seems obvious that an Air Service as such, apart from the Navy or the Army, is at present an impossibility. Further, it is impossible to see how a separate Air Service can ever become a possibility in the future, because the training of a soldier for land warfare and the training of a sailor for Naval warfare are so different that it would not be humanly possible for one man to become thoroughly competent in both branches of Science. For which reason it will appear that even if an attempt were made to produce a separate Air Service, that Air Service itself would have to be split into absolutely distinct sections, one for Naval operations and one for Military operations, the former consisting of officers trained as sailors are trained, and the latter having its personnel trained in Military Science. Thus, it seems clear that aircraft must remain definitely as Arms of the two existing Services.

### Cases in Point.

Merely as a minor example, apart from the higher training of Service aviators in the Science of Naval and Military strategy and tactics, which is necessary to a highly placed officer, consider the case of a pilot trained as a soldier and handed over for naval work. He may be a first-class flier, and he may be able to handle big seaplanes quite nicely at the first attempt, when operating from the shore, but what kind of a flier is he going to make at first of bringing a 250-h.p. seaplane along-



side a ship in a seaway, and how long is he going to take to learn the tricks of getting alongside, hooking on, hoisting, stowing, and so on?

The seaplane-carrying ships have not an unlimited number of spare machines down at rail-head ready to be flown to the advanced base at half an hour's notice, as is the Army custom, and the pilot who "crashes" a big seaplane is liable to be spoken to in a manner not used to a military pilot who stands a B.E. on its nose.

Contrariwise, if a pilot is trained to navigate over the open sea during a six-hours' patrol, to alight in a six-foot sea, and to come alongside "handsome," what chance has he of learning to land a 90 m.p.h. "tabloid" in a five-acre field which can only be reached by doing a right angle turn between the pinnacles of the local cathedral and scraping over the roof of the sacristy?

Some people argue that the pilot need only be a good aerial chauffeur, and so can acquire all the tricks of sea and land. Which may be true to some extent, but the best Service aviator is going to be quite a different animal.

#### Not a Chauffeur's Job.

Already the best work, as scouts, as bomb-droppers, and as artillery "spotters," has been done by officers flying alone. In the future it will be even more so. The specially trained air-officer will treat his aeroplane as a vehicle only. The act of flying will be the simplest

part of his work. Every man with a gentleman's education will fly, just as he can ride a horse to-day. Nevertheless, the cavalryman's technical use of his horse is different from the gunner's use of him. And similarly the scout, the bomb-dropper, and the "spotter" will use different types of aeroplanes, and will handle them differently. In fact, it is already so to-day, for one finds some lucky pilots who have made reputations, actually with a regular stud of aeroplanes of different types for their own private use for different purposes.

One does not send a coachman to drive a cavalry scout's horse, and one will not send a pilot to fly an air scout's aeroplane. And, anyhow, why use two men in an aeroplane when one is enough?

The chauffeur's job will only come in with the fighting machines, for the gun-carrier will need a pilot just as the artillery need drivers who can handle horses but not guns. Even so, the sea-chauffeur is going to be different from the land chauffeur, just because the finest car-driver on the road would pile up the simplest motor-boat, through sheer ignorance of the habits of water, and *vice versa*.

So one sees that the technical training of the Air-and-Sea, and that of the Air-and-Land Services, must be essentially different from the highest to the lowest ranks.

## On Success and Failure.

It has been argued by some people, who are obviously ignorant of what has really taken place, that the ascendancy of the French and of the British aircraft in the present war has forced the Germans to use both their airships and aeroplanes less as an arm than as an independent Service, and that the uselessness of Zeppelins in particular as an Arm for land operations has resulted in their being used independently for sporadic raids as if they belonged to a separate Service.

It has even been stated that their utility as a Naval Arm has not been in evidence, owing to the enforced seclusion of the German fleets in their harbours, on the grounds that as there are no German Naval operations of any importance, there is no use for the Zeppelin airship as a Naval Aerial Arm. This statement displays gross ignorance, and it is regrettable that it should have appeared in a periodical noted for the high level it usually attains in Service technicalities.

As a matter of fact, the Zeppelin has been proved to be fairly innocuous as a direct weapon of offence, in that it has caused no casualties worthy of note, and has had comparatively little effect against property. On the other hand, it has definitely proved itself to be of immense value as an arm of the German Navy, and of the German Army.

The Danish correspondent of this paper has repeatedly emphasised the fact that both in the North Sea and in the Baltic Zeppelin airships have been continually on patrol practically since the very beginning of the war, and he has stated on authority which he has good reason to trust, that the crew of one of the big German airships were decorated with the Iron Cross for the part they took in co-operating with German submarines, particularly in manoeuvres which resulted in the torpedoing of the three British cruisers, the "Cressy," "Hogue," and "Aboukir." Zeppelins and other airships have also been constantly seen on patrol by our own warships and smaller patrol craft at sea.

Moreover, a Zeppelin acting under the orders of the German Army Staff dropped bombs on the railway close to Calais not long ago, and though it did not destroy the bridge for which the bombs were intended, it cut the main line of supply of the British Army for something like 48 hours, and held up thousands of reinforcements, not to mention some thousands of tons of food and ammunition.

It is also necessary to remember that certain of our own Naval airships did extremely good service as scouts during such time as our Expeditionary Force was crossing the Channel in August last. Thus, whatever one's views may be of airships as weapons of offence, it is evident that as an auxiliary Arm to a fleet or an Army they have thoroughly proved their value.

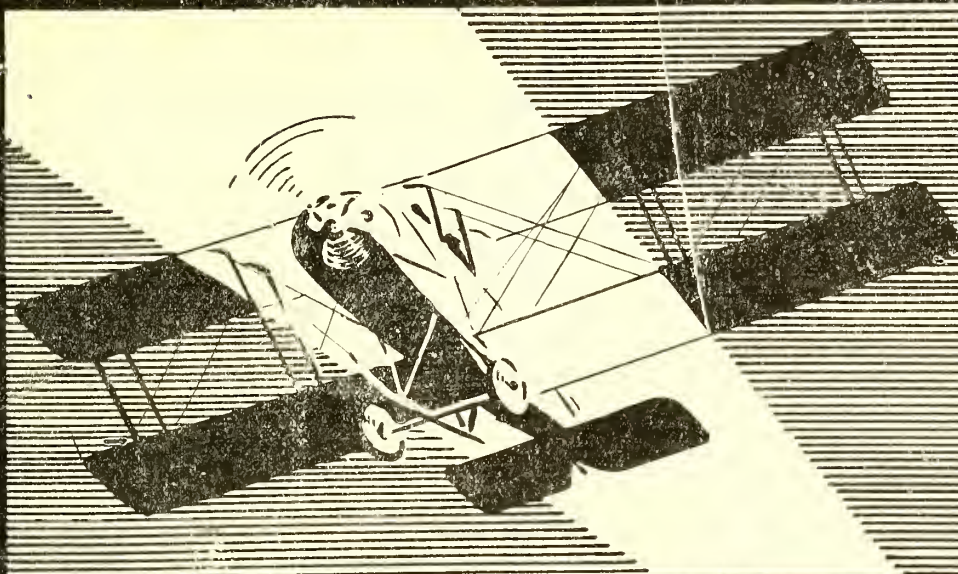
On both sides seaplanes have also done much useful work of a similar nature, though as independent weapons of offence they have done nothing.

When one comes to consider the actively offensive work of land aircraft, it is equally evident that their use is as an Arm rather than as a Service. The raids which have been made by the British aircraft of late, destroying railway junctions and supply depots behind the German lines was a valuable and integral portion of the Military operations, and the work done by the Royal Flying Corps and the detachments of the Royal Naval Air Service on the Continent in attacking and chasing away German aircraft was precisely similar to the work which would have been done under the conditions of previous wars by cavalry screens operating ahead of advancing armies or by massed cavalry round the flanks of armies actually in contact.

To suppose that aircraft could ever be a separate Service on the strength of anything that aircraft have done in the present war would be akin to supposing that cavalry could be a separate Service on the strength of Remmenkampf's cavalry raid in Manchuria during the Russo-Japanese war, or on the strength of the Cossack raids into East Prussia in the early stages of the present war.

The one outstanding example of aircraft being of less use than they might have been was when a detachment of the Royal Naval Air Service on the Continent tried to behave as a separate Service, without direct co-operation with either the Fleet or the Army, and without subordination to either. The only practical results it achieved were to waste a lot of time, money, and machines, to get itself thoroughly disliked for a band of undisciplined pirates, and to fill the halfpenny press with photographs which brought discredit on a really deserving branch of the Navy. The same amount of bravery and skill in flying would have produced highly valuable results if used in the work of an arm of either Service.





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## On Mr. Churchill's Opportunity.

If such a thing as a separate Ministry of the Air were a working proposition, which it is obviously not, the one person fitted to be head of such a department is Mr. Churchill, and one hopes in due time to see him the first Minister of Aerial Communications. The great puzzle is, how his intimate knowledge of aviation and all its ways may now be best utilised.

The Duchy of Lancaster does not seem to have much connection with flying—unless it includes the sands at Waterloo, near Liverpool, the airship sheds at Barrow-in-Furness, and the aeroplane sheds at Bowness-on-Windermere. Even if it did, the whole lot would seem very small beer to Mr. Churchill after the somewhat heady effervescence of the R.N.A.S. entire.

Still, aviation cannot afford to lose Mr. Churchill any more than Mr. Churchill could bear to give up aviation. I verily believe that Mr. Churchill is more keenly interested in the smallest "Schneider tabloid" than in the biggest battleship. He knows a great deal about the Navy, but he knows a great deal more about aviation in connection with the Navy. May a mere journalist venture a suggestion to the Cabinet?

### The First Air Lord.

Their Lordships of the Admiralty are of various kinds. There is the First Lord, a civilian, there is the First Sea Lord, a sailor, there are various other Sea Lords, each of whom controls his own department, water-tight below the surface, but communicating—generally amicably—with all the others.

Would it be possible to form yet another department under an Air Lord, specially to deal with the Air Service, and to represent the Air Department in Parliament if necessary? If such a thing were possible Mr. Churchill is obviously the only man for the job. He would have his work at his finger-tips, which is more than can be said of most heads of departments. He would have independent control, in so far as the Air Service would carry out independent operations in certain fields of activity, such as raids and anti-aircraft defence, and so on. And in other respects his department would co-operate with the rest of the Navy as an integral part thereof rather than be subordinate to it.

He would be free to concentrate the whole of his admirable mental activity on one job, with results which could hardly fail to be of the highest value, and he would apply himself to the work with the greater good will because it happens to interest him.

Those who know anything of the R.N.A.S. realise

### New Pilots.

The following Aviators' Certificates have been granted since the last list was published:—

1242, Lieut. Lawrence Arthur Pattinson (5th Durham L.I., T.F.) (Maurice Farman biplane, Military School, Harrow), April 30th; 1243, Lucien Deschamps (French subject) (L. and P. biplane, London and Provincial School, Hendon), May 11th; 1244, 2nd Lieut. George Antony Turton (Yorks. Regt.) (M. Farman bi., Mil. Sch., Farnborough), May 12; 1245 (hydro-aeroplane), Flight Comm. Hyde Hyde-Thomson, R.N.A.S. (Wight seaplane and Bristol bi., R.N. Air Station, Calshot, and R.N. Air Station, Chingford), May 15; 1246, 2nd Lieut. Colin Cooper (R.W. Surrey Regt.) (M.F. bi., Mil. Sch., Farnborough), May 17th.

1247, Serg. Alfred Ernest Sharpe, R.F.C. (M.F. bi., C.F.S., Upavon), May 19th; 1248, Lieut. Bache McEvers Athole Hay (19th Hussars) (Beatty-Wright bi., Beatty School, Hendon), May 20th; 1249, Flight Sub-Lieut. Theophilus Chater Vernon, R.N.A.S. (M.F. bi., C.F.S., Upavon), April 15th; 1250, Capt. Bindon Blood (4th Hussars) (M.F. bi., British Flying School, Le Crotoy, France), April 18th; 1251, Lieut. R. T. Vachell (Northumb. Fus.) (M.F. bi., British Flying School, Le Crotoy), April 28th.

1252, 2nd Lieut. O. V. Le Bas (1st Queen's, R.W. Surrey Regt.) (M.F. bi., Brit. F.S., Le Crotoy), April 29th; 1253, Capt. R. G. Cherry, R.F.A. (M.F. bi., Brit. F.S., Le Crotoy,

how highly Mr. Churchill is esteemed by all who have been concerned with the building up of that Service, and how deeply his loss would be regretted. The R.N.A.S. is destined to be the biggest semi-independent branch of the Navy, and no one is better fitted than Mr. Churchill to accelerate its progress towards its ultimate development. If he cannot be the first Air Minister, cannot he be First Air Lord of the Admiralty?

### An Old Idea Reclothed.

It has been suggested by the writer who displayed such gross ignorance about airships that a "National Air Service" could be formed with stations in various sea-coast towns for the express purpose of repelling hostile aircraft. This is a very old idea dating back to the period when the City of Liverpool endeavoured to raise a squadron of aeroplanes on its own account, and it was then shown fairly clearly that though a series of such squadrons of local aerial volunteers was quite a working proposition, the whole system would have to be under the control of the Army or the Navy, whichever Service was responsible for coast defence, for the very good reason that these squadrons and their stations would have to be subordinated to the general scheme of defence, and co-operate with that scheme.

To form such a volunteer Air Service at the present moment seems obviously impracticable, because, in the first place, every available aeroplane is needed for active service abroad, or for existing coast defence stations belonging to the Royal Naval Air Service; and, secondly, because practically every man of an age to become an aeroplane pilot is merely waiting his turn to join either the R.N.A.S. or the R.F.C.

When the war is over, and we have time to reorganise our whole Naval and Military system, it is highly probable that the Royal Flying Corps will have its Territorial squadrons.

Similarly, coast towns may have local detachments of seaplanes, manned by the R.N.R., or R.N.V.R., and under the control of the R.N.A.S. Here the First Air Lord would have still further scope for his activity. But, under existing circumstances, no scheme for forming localised squadrons of aircraft is workable.

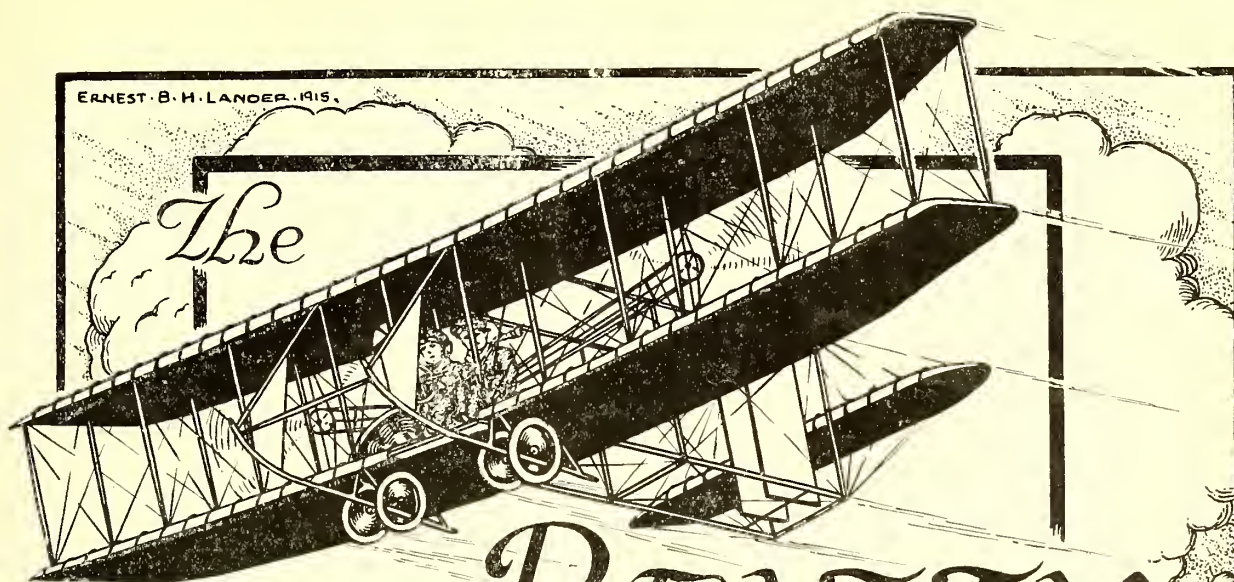
The time will undoubtedly come when air fleets will be formed capable of carrying on war on a large scale in the heart of an enemy country, but, as already suggested, the units of such a fleet must have either a Naval or a Military training. They cannot have both.—C. G. G.

April 30th; 1254, Capt. H. S. L. Scott (4th Hussars) (M.F. bi., Brit. F.S., Le Crotoy), April 30th; 1255, 2nd Lieut. D. K. Johnstone, R.F.C. (M.F. bi., Brit. F.S., Le Crotoy), May 6th; 1256, 2nd Lieut. C. R. Rowden (Worc. Regt.) (M.F. bi., Brit. F.S., Le Crotoy), May 7th.

1257, Lieut. K. B. Harbord, R.F.A. (M.F. bi., Brit. F.S., Le Crotoy), May 11th; 1258, 2nd Lieut. R. Balcombe-Brown, R.F.A. (M.F. bi., Brit. F.S., Le Crotoy), May 12th; 1259, 1st Air Mech. A. Reffell, R.F.C. (M.F. bi., Brit. F.S., Le Crotoy), May 17th; 1260, Flight Sub-Lieut. William Laurent Greer, R.N.A.S. (G.-W. bi., Grahame-White School, Hendon), May 20th; 1261, 2nd Lieut. Guy Stedman May Ashby, R.G.A. (M.F. bi., Brit. F.S., Le Crotoy), May 20th.

1262, Percy George Allen (L. and P. biplane, L. and P. School, Hendon), May 21st; 1263, Arthur Thomas Whitelock (M.F. bi., Mil. Sch., Brooklands), May 22nd; 1264, Capt. Adrian Helyar Knopp O'Brien (2nd D.G., Queen's Bays) (M.F. bi., Brit. F.S., Le Crotoy), May 22nd; 1265, George Edward Heygate Fincham (M.F. bi., Mil. Sch., Brooklands), May 24th; 1266, Herbert Sanford Ward (M.F. bi., Mil. Sch., Brooklands), May 25th.

[It will be news to many that there is a British Military School at Le Crotoy. This is doubtless on the ground used by the Caudron firm and by the French escadrille formerly quartered there. Also, the existence of an R.N. Air Station at Chingford is disclosed in this interesting official list.—Ed.]



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## Naval and Military Aeronautics.

### GREAT BRITAIN.

From the "London Gazette," May 25th, 1915.

ADMIRALTY, MAY 22ND.

ROYAL NAVAL AIR SERVICE.—Probly. flight sub-lieuts. confirmed in rank of flight sub-lieut.: B. Travers. November 9th. L. P. Openshaw. November 16th. H. H. Square. January 14th. W. H. Dunn. January 28th. R. G. Mack. March 6th. Probly. flight sub-lieut. for temp. service confirmed in rank of flight sub-lieut. for temp. service: F. G. D. Hards. February 12th.

\* \* \*

WAR OFFICE, MAY 25TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Assist. Eqpnt. Officer—Lieut. A. V. Newton, 3rd Som. L.I., and seconded. May 10th.

Sqdn. Com.—Capt. S. D. Massy, 29th Punjabis, I.A., from flight com., and to be temp. maj. May 13th.

ARMY SERVICE CORPS.—Temp. Sec. Lieut. R. V. Southwell relinq. commn. on appt. to R.N. Air Serv. May 12th.

\* \* \*

From the "London Gazette," May 26th, 1915.

WAR OFFICE, MAY 26TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officer—Sec. Lieut. L. W. F. Turner, S.R. May 1st.

Asst. Eqpnt. Officer.—Sec. Lieut. H. S. Coles, S.R. May 5th.

MEMORANDA.—Captains to be temporary majors: P. W. L. Broke-Smith, R.E., whilst employed as Dept. Asst. Dir. of Aviation. March 26th. H. L. Reilly, 82nd Punjabis, I.A., whilst employed as flight (squadron?) commander. April 9th.

\* \* \*

From the "London Gazette," May 27th, 1915.

WAR OFFICE, MAY 27TH.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieuts. to be lieuts. April 24th: F. P. Adams, R. R. Orr-Paterson, A. B. Ford, C. H. Saunders, J. R. Howett, E. L. M. L. Gower, T. F. Rutledge, A. G. Weir, H. de Havilland, L. Parker, C. A. Hooper, C. M. Crowe, J. P. Inglefield.

Sec. Lieut. (on prob.) G. Merton confirmed in rank.

H. I. F. Yates to be sec. lieut. (on prob.). May 12th.

\* \* \*

From the "London Gazette," May 28th, 1915.

ADMIRALTY, MAY 25TH.

ROYAL NAVAL AIR SERVICE.—Appntd. flight lieut. for temp. service: Hon. G. de St. C. Rollo. April 29th.

Appntd. flight sub-lieut. for temp. service G. W. Cranfield, W. C. Michie. April 6. Hon. A. S. Byng, J. R. Davison, E. S. Cripps, N. de Grey, B. C. Windeler. April 29th.

\* \* \*

WAR OFFICE, MAY 28TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Appt. of flying officers to be flight coms. and temp. capt. in "Gazette" of May 8, post-dated to April 19th: Lieut. E. C. Rabagliati, Yorks. L.I.; Lieut. R. L. Charteris, S.R.; Sec. Lieut. (now Lieut.) M. B. Blake, S.R.

[Would not "ante-dated" be more correct than "post-dated," in this case?—Ed.]

Asst. Eqpnt. Officers.—April 9th: Sec. Lieut. A. G. Clark, S.R.; Sec. Lieut. A. M. Cott, S.R.

### NAVAL.

The following appointments were notified at the Admiralty on May 26th:—

ROYAL NAVAL AIR SERVICE.—The undermentioned have been granted temp. commissions as lieuts., R.N.V.R., and appointed to the "President," additional, for R.N.A.S., to date May 20th: Earl of Northesk, W. P. Wilson, and R. D. Bartlett.

Sub-Lieuts. (R.N.V.R.)—C. S. G. C. Kirby and R. V. Mostyn, promoted to lieuts., R.N.V.R., to date May 24th.

Temp. Sub-Lieut. (R.N.V.R.) E. A. Lumley, promoted to temp. lieut., R.N.V.R., to date May 24th.

Temp. Chief Petty Officer (R.N.V.R.) J. W. Culme-Seymour and Messrs. T. B. Johnson and A. N. Mansergh granted temp. commissions as sub-lieuts., R.N.V.R., and appointed to the "President," additional, for duty with R.N.A.S., to date May 24th.

Messrs. J. E. M. Pritchard and H. F. Mills entered as prob. flight sub-lieuts. for temp. service, and appointed to the "President," additional, for R.N.A.S., to date May 24th and May 25th respectively; also S. Bell and J. E. Morgan, to date June 9th and May 31st respectively.

Sub-Lieut. (R.N.V.R.) R. Chambers transferred to R.N.A.S., as prob. flight sub-lieut., and appointed to the "President," additional, for R.N.A.S., to date May 31st.

The undermentioned sub-lieuts., R.N.V.R., graded as flight sub-lieuts. for temp. service, and reappointed to date as stated: The Hon. de St. Croix Rollo, the Hon. A. S. Byng, J. R. Davison, E. S. Cripps, N. de Grey, and B. C. Windeler, April 29th; G. W. Cranfield and W. C. Michie, April 6th.

\* \* \*

The following appointments were notified at the Admiralty on May 29th:—

ROYAL NAVAL AIR SERVICE.—Capt. (Reserve of Officers) J. W. F. Tarleton granted a temporary commission as lieut., R.N.V.R., and appointed to the "President," additional, for service in armoured cars, to date May 25th.

Mr. W. E. Plaister granted a temp. commission as lieut., R.N.V.R., and appointed to the "President," additional, for duty with armoured cars, to date May 23rd.

Mr. C. V. Maybery granted a temp. commission as lieut., R.N.V.R., and appointed to the "President," additional, for inspectional duties in the R.N.A.S., to date May 27th.

Mr. E. Dalziel granted a temp. commission as lieut., R.N.V.R., and appointed to the "President," additional, for duty with R.N.A.S., to date May 27th.

Messrs. F. W. Merriam and R. W. Lane (probationary) entered as flight lieuts., and appointed to the "President," additional, for R.N.A.S., to date May 27th and May 25, respectively.

Messrs. E. Cadbury and E. A. Pearson (temp. service) entered as flight sub-lieuts. on probation, and appointed to the "President," additional, for R.N.A.S., to date May 31st.

The following appointments were notified on May 31st:—

ROYAL NAVAL AIR SERVICE.—Mr. M. G. Gill granted a temporary commission as sub-lieutenant, R.N.V.R., and appointed to the "President," additional, for R.N.A.S., to date May 29th.

Messrs. W. B. Threlfall and E. M. Pizey (temporary) entered as probationary flight sub-lieutenants, and appointed to the "President," additional, for R.N.A.S., to date June 7th.

ROYAL NAVAL RESERVE.—Temp. Sub-Lieuts.: J. E. Jones, to the "Masatan," to date May 26th; H. W. Furnival and F. D. Casey, to the "President," additional, for duty with R.N.A.S., to date May 30th.

\* \* \*

The Secretary of the Admiralty announced the following casualty on May 30th:—

### SLIGHTLY WOUNDED.

Sub-Lieut. Herbert F. Melville, R.N.V.R., Armoured Car Division (May 9th).

[Apparently with R.N.A.S. cars in France.—Ed.]

\* \* \*

The "Court Circular" states that at Buckingham Palace on May 27th the King decorated Chief Petty Officer James Hendry, Royal Naval Air Service, with the Albert Medal, second class, "For gallantry in saving the life of the Pilot of Aeroplane No. 58, who had been stunned by the premature explosion of a bomb, by extricating him from the sinking wreckage of the machine, after both had fallen some 150 ft. into the sea, on November 19th, 1914, a few miles north of Yarmouth.

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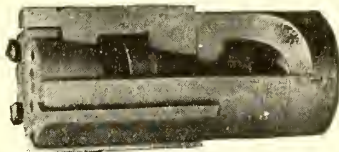
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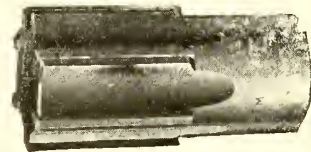
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A British destroyer brought into Harwich on May 25th a German sub-lieutenant and a mechanic who had been taken from an aeroplane found floating in the North Sea. The machine is supposed to have come down owing to engine trouble. It was sunk, and the men were placed on board H.M.S. "Ganges" at Harwich.

\* \* \*

An officer at the Dardanelles, since wounded, writes:—

"We saw plenty of aeroplanes at the Dardanelles, both hostile and our own. We had some excitement one evening. They are using an observation balloon attached to one of the ships, and it was attacked by a German aeroplane. It was too high to distinguish it, but it was a biplane. It dropped five bombs and missed every time. Some of the bombs dropped precious close to our ship. The balloon ship fired at it with an anti-aircraft gun, but missed. One of our cruisers also fired. It was very interesting to see the shells bursting round it, but it got away."

\* \* \*

Mr. Merriam, whose appointment to a commission is noted, will be remembered as one of the Bristol Co.'s instructors at Brooklands, where he did much to cater for the welfare of the pupils by providing them with a comfortable "guest-house." As an instructor he was highly successful, and his civility and strict attention to business earned him the good will of many aviators now on service. He has recently been acting as civilian instructor to the R.N.A.S. at Hendon and Chingford.

\* \* \*

The "Algemeen Handelsblad," Amsterdam, Monday, is informed that a British aviator interned on the island of Urk made an unsuccessful attempt to escape yesterday. Apparently one of his "relatives" managed to reach the island—which is a small one in the Zuyder Zee—by motor-boat, and the officer sprang into the water, and, swimming strongly, reached the boat, which at once sped off. On arrival at Vollandam, however, it was found that the police had been notified, and the officer was duly arrested.

[One wonders whether it was Sunshiney or Rainey?—Ed.]

#### MILITARY.

The Field-Marshal Commanding the British Forces in France reported as follows on May 30th:—

Yesterday one of our aeroplanes brought down a German aeroplane in the neighbourhood of Moorslede.

\* \* \*

The following passage in the descriptive account, published on May 27th, which has been communicated by an Eye-Witness present with General Headquarters continuing and supplementing the narrative published on the 24th inst., deals with aircraft.

May 25th.

On Thursday, the 20th, the rain held up; but it was a dull day, with low, hanging clouds, which militated against artillery action. . . Not far from Ypres, our anti-aircraft guns brought down a hostile aeroplane. It fell headlong on the parapet of the German trenches within sight of the French, and both pilot and observer must have been killed at once.

Our Allies, observing that the fallen machine was exciting considerable interest and attention amongst the occupants of the enemy's works, trained some machine-guns on the spot and waited events. When sufficient Germans had collected fire was opened upon them from these guns.

Another German aeroplane was brought down by the French.

\* \* \*

The following casualties in the Expeditionary Force, published on May 27th, are reported from General Headquarters under date May 20th:—

#### KILLED.

Barrington-Kennett, Maj. B. H., 2nd Grenadiers.

#### WOUNDED.

Gaye, Capt. A. D., Bedfordshire Regt., attached Royal Flying Corps.

Graham, Lieut. G., Royal Flying Corps.

\* \* \*

Basil Herbert Barrington-Kennett was born on November 10th, 1884, at Brighton. He was gazetted to the Grenadier Guards in 1907, and promoted to Lieutenant in 1907. When

military aviation became a workable proposition he was one of the first to devote himself to it, and was appointed to the old Air Battalion at Farnborough under Major Sir Alexander Bannerman, Bart., R.E. When the Aeroplane Company of the Air Battalion was formed under Captain (now Lieut.-Col.) Fulton, R.A., at Lark Hill, Mr. Barrington-Kennett joined it, and did remarkably good work.

He took his certificate, No. 43, on a Blériot monoplane, at Hendon, after learning at the Drexel School at Beaulieu, the certificate being dated December 31st, 1910, and afterwards became one of the finest fliers of his day. He won the Mortimer Singer Prize for the longest flight by an officer of the Army, by flying a distance of 249½, on a Nieuport monoplane (50-h.p. Gnome) with a passenger on February 14, 1912. Also he took part in the manoeuvres of 1911 on a box-kite biplane.

When the Royal Flying Corps was formed in 1912 he was appointed Adjutant at Headquarters at Farnborough, and held that post until war broke out, when he was appointed to the Staff as Deputy-Assistant Adjutant and Quartermaster-General.

While Adjutant of the R.F.C. he won the esteem and respect of all with whom he came in contact, both his senior officers and his subordinates. Like the majority of Guards officers, he was a terrifically hard worker, and seemed to have an unlimited capacity for work. Yet he was never so hard worked that he forgot to be courteous even to those who worried him, in his capacity of Adjutant—which amounts to maid-of-all-work—with foolish questions or trivial personal matters.

It was, perhaps, his unfailing good nature which chiefly endeared him to his juniors, but the high value of his work won for him the appreciation of his seniors, with the result that when the first considerable batch of distinctions was handed out to the Royal Flying Corps, among the King's Birthday Honours of 1913, temporary-Captain Barrington-Kennett, as he had then become, was specially noted for promotion to Major by Brevet on attaining the substantive rank of Captain in his regiment. He reached this rank in August last while on active service as a Staff Officer.

As D.A.A. and Q.M.G. he continued the good work he had begun at Farnborough, and, if possible, increased the esteem in which he was held in his Corps. As one officer put it, after some months of war—"B.-K. does all the work while other people walk about and argue."

He did little or no flying after his appointment as Adjutant, for his work left him no time for amusement, but in his day he was one of our best pilots, possessing a beautiful touch and excellent judgment. He was, in fact, one of the few British aviators who could handle a Nieuport without making mistakes.

At the time of his death Major Barrington-Kennett had left the R.F.C. and was serving with his regiment, the Grenadier Guards.

As an officer he set an example which few can hope to imitate with success, and as a friend he was beloved by all who served with him.

To his parents, who have already lost a younger son, killed in the early days of the war, all will offer their sincere sympathy in the death of one whose personal qualities and successful career at such an early age indicated promotion to the highest ranks had he been spared.

\* \* \*

The following appeared in the Casualty List published on May 29th:—

#### DIED OF WOUNDS.

MacDonnell, Capt. H. C., Royal Irish Regiment, attd. Royal Flying Corps.

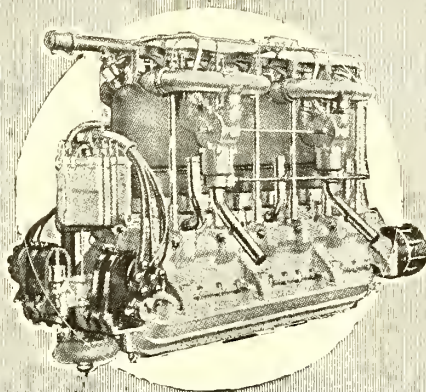
\* \* \*

Herbert Creagh MacDonnell, Royal Irish Regiment, attached Royal Flying Corps, was born on March 30th, 1884, at Bangalore, India.

He was educated at Elstree School and Cheltenham College, whence he passed into Sandhurst and obtained his commission in the 18th Royal Irish on December 16th, 1903. After serving in South Africa and India he was promoted captain on April 1st, 1910.

He took his certificate, No. 309, on a Bristol biplane at Brooklands, the certificate being dated October 1st, 1912.

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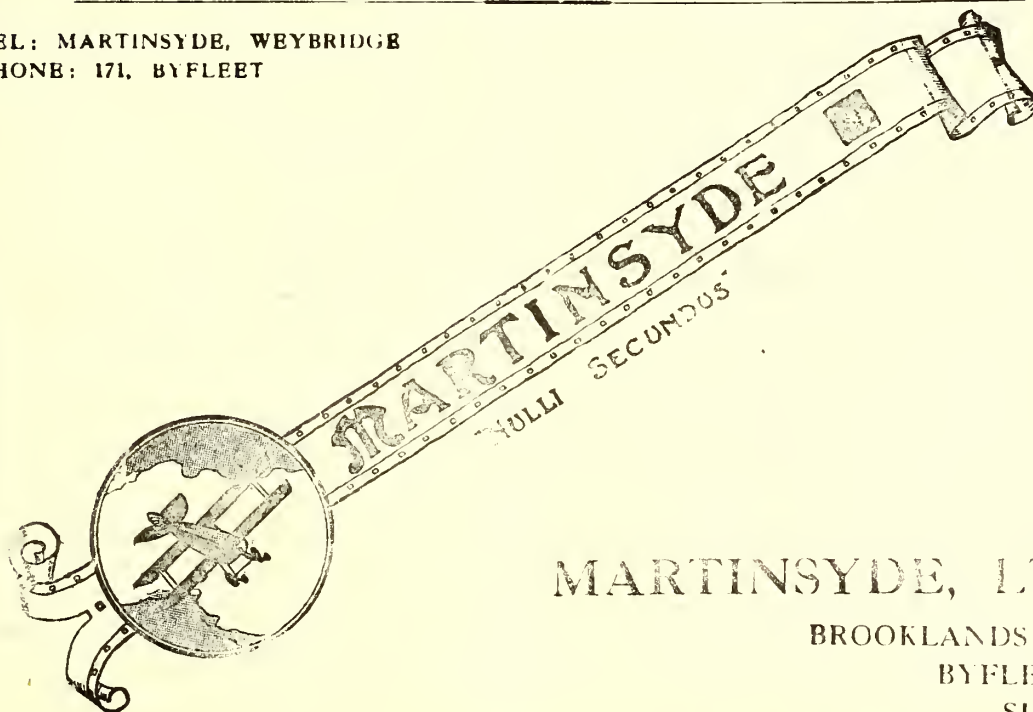
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In 1913 he joined the Royal Flying Corps, in which he served for a year and rejoined his regiment early in 1914, still remaining in the Reserve of the Royal Flying Corps.

When the war broke out he was ordered to rejoin the Flying Corps and served with it in France till he met his death. He was only promoted a Flight Commander on May 18th.

It is reported that he died as the result of injuries received in an aeroplane accident.

\* \* \*

The undermentioned casualties in the Expeditionary Force were reported on May 30th from General Headquarters under date May 23rd:—

#### KILLED.

Bewes, Lieut. R. C. H., King's (Liverpool Regiment), attd. Royal Flying Corps.

Hyland, Sec. Lieut. F. H., Yorks Regt., attd. Royal Flying Corps.

\* \* \*

The following appeared in the obituary columns on May 28th:

BEWES.—Killed in action, in France, on Sunday, the 23rd May, in his 25th year, Reginald Charles Hope Bewes, Lieutenant, The King's (Liverpool Regiment) and Royal Flying Corps, elder son of the late Reginald Anstis Bewes, of Plymouth.

R. C. H. Bewes was born at Plymouth on July 28th, 1890, and was the elder son of the late Mr. R. A. Bewes, solicitor, of Plymouth, and grandson of the late Rear-Admiral Charles Webley Hope. He was educated at Clifton College (South Town and Smith's House) and at the Royal Military College, Sandhurst. He was gazetted in 1910 to the 1st The King's (Liverpool Regiment), and was promoted Lieutenant on September 11, 1913. He learned to fly at the now defunct Ewen Flying School at Hendon, and took his certificate, No. 523, on a Caudron on June 17th, 1913. He was appointed a flying officer in the Royal Flying Corps on August 5th last.

It is reported that his death was caused by one of the bombs carried in his machine exploding while in the air and wrecking the aeroplane.

\* \* \*

Second Lieutenant Frederick Hunter Hyland, Yorkshire Regiment, attached Royal Flying Corps (killed in action), was gazetted in September of last year. He was not an aviator.

\* \* \*

The following casualty in the Expeditionary Force was reported on May 31st from General Headquarters, under date May 25th:—

#### DIED OF WOUNDS.

Sec. Lieut. H. F. Boles, 17th Lancers, attached Royal Flying Corps.

\* \* \*

The following appeared in the obituary columns on May 29th:

BOLES.—On May 24th, at Bailleul, died of wounds received during a reconnaissance on the morning of the 24th, Second Lieutenant Hastings F. Boles, 17th Lancers, attached Royal Flying Corps, the dearly-loved elder son of Lieut.-Col. Dennis F. Boles, M.P., Comdg. 3rd Devonshire Regt., and Mrs. Boles, Watts House, near Taunton, aged nineteen. R.I.P.

Hastings Fortescue Boles was the elder son of Lieutenant-Colonel Dennis F. Boles, member of Parliament for the Wellington Division of Somerset. He was educated at Eton, and passed into Sandhurst in July of last year, receiving his commission in January of this year. He was attached as an observer to the Royal Flying Corps two months ago, and then joined a squadron serving with the Expeditionary Force. He was not an aviator. It is believed that he was a passenger with Capt. McDonnell at the time of his accident.

\* \* \*

Major P. W. L. Broke-Smith, R.E., whose appointment as D.A.D.M.A. is gazetted, was an officer of the old Air Battalion under Major Sir Alexander Bannerman, Bart., R.E. Capt. Broke-Smith, as he then was, took his certificate on a box-kite at Brooklands, and afterwards left the R.F.C. and went abroad on duty with his own Corps, the R.E.

The following appeared in the Wedding Announcements on May 25th:—

O'MALLEY—EDWARDES.—On May 22nd, 1915, at St. Edward's Church, Windsor, very quietly, by the Rev. Canon Longenotto, Harold McDonnell O'Malley, Royal Flying Corps, third son of the late Middleton Moore O'Malley, J.P., and Mrs. O'Malley, of Ross, County Mayo, to Nancy Olga Edwardes, second daughter of Mr. and Mrs. George Edwardes, of 11, Park Square, N.W., and Winkfield.

\* \* \*

An R.A.M.C. Territorial on very active service in France writes:—"I do not think much of the Academy this year. Rather a stunt picture of Wyllie's, 'The Fighting Line from Ypres to the Sea,' with a two-seater Blériot, and the occupants sitting much too high above the fuselage. Still, it's not bad altogether.

"We still see plenty of flying in all sorts of weather, Vickers gun-buses and Voisins blindées being much in evidence. Haven't seen a German plane for weeks. I should think they must be thoroughly disgusted with their air service, as with the material they had at the beginning of the war they ought to have chased us out of the skies the first month, but as the R.F.C. chaps say, 'Nous avons changé tout cela, quoi? Je penserais joliment ainsi. Pas demi mon garçon! Quelque Service maintenant quoi?'"

Later he writes:—"It is a gloriously hot day. A strong wind and an absolutely blue sky. At this precise moment I can see three planes. Two Vickers gun-buses—one is just passing overhead moving very slowly against the wind, making a lovely healthy row with its 100-h.p. Gnome. One machine in the distance is being potted at (I think it is an Avro) by the Germans. You can see the little flashes and then the white balls of smoke hanging up in the sky everywhere but near the machine, which continues nonchalantly on its way. You can just hear the pop-pop of the explosion as the shells burst. Someone is playing 'Make your mind up, Maggie Mackenzie' on a mouth-organ, and closer at hand an unmusical soul is whistling the 'Already' chorus from 'The Arcadians.'"

#### FRANCE.

The afternoon communiqué of May 26th says:—

During yesterday our aircraft everywhere showed great activity, and were successful in various bomb-dropping expeditions. They dropped 203 projectiles, of which 82 were large bombs of 10 kilos each, and 14 shells of 155 calibre weighing 42 kilos each. The efficacy of the explosions was verified at several points, notably at the German aviation depot at Hervilly, south-east of Roisel, where a shed and an air machine were set on fire, the German reserve park for aircraft at Grand Triel, north-west of St. Quentin, where a hangar was destroyed, and at the station of St. Quentin, where a petrol store was struck. During the preceding night four shells were dropped on the station of Douai, and a fire was seen to break out near the goods station.

\* \* \*

The evening communiqué of May 26th says:—

A German aeroplane, which was flying towards Paris this morning, on meeting the escadrilles of the entrenched camp, threw bombs without any result on Villenoye, near Meaux. The escadrilles of the front, having been warned, awaited the enemy machine on its return. The Aviatik, which carried four bombs, was brought down by one of our machines near Braine, near Soissons. Both the German aviators were killed.

Our aeroplanes successfully dropped fifty four-inch shells on the aerodrome of La Brayelle, near Douai. The sheds and the machines on the ground were struck.

[The aerodrome of La Brayelle is the old Bréguet ground.—Ed.]

\* \* \*

The communiqué of May 27th says:—

An aerial force composed of eighteen aeroplanes, each carrying heavy projectiles, bombarded this morning at Ludwigshafen the chemical factory belonging to the Baden Aniline Dye Company, now one of the most important



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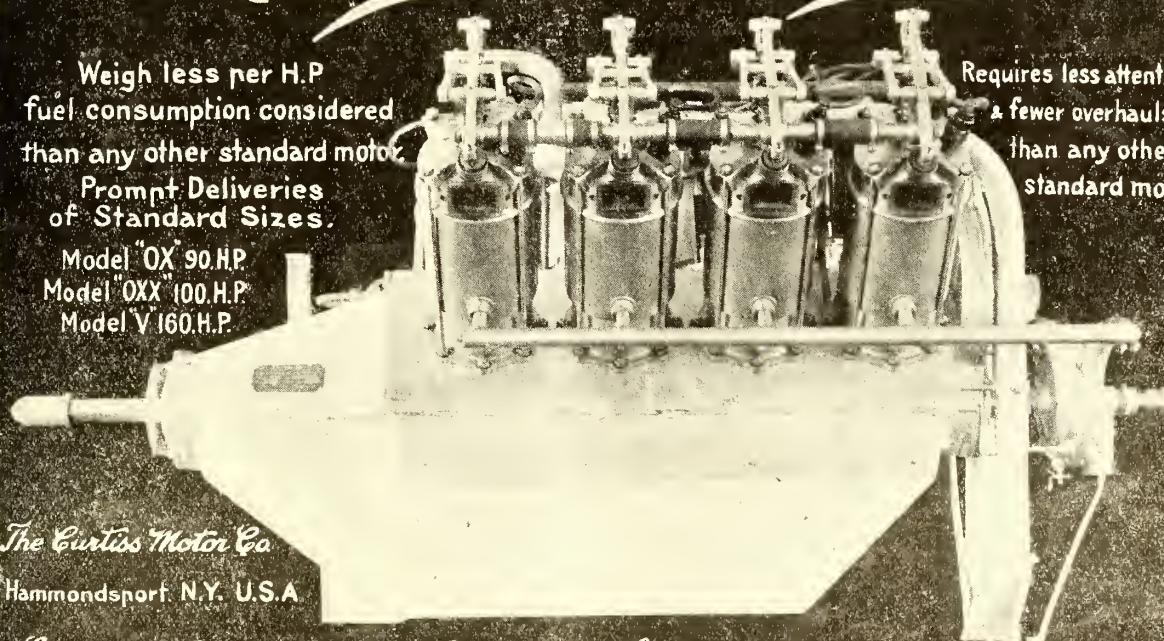
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factories of explosives in Germany. The results proved the efficacy of the bombardment; several buildings were struck and fires broke out in many places. The aviators were nearly six hours in the air and covered a distance of over 400 kilometres.

This expedition against an important military establishment was a retaliation for the German air raid on Paris.

The air raid on Ludwigshafen ranks among the most important of the war. The factory which was set on fire is one of the largest of the kind in Germany, and great secrecy has been observed as to the work carried on there during the war.

It is reported that large numbers of workmen were drafted into Ludwigshafen some time ago.

\* \* \*

The communiqué of May 29th says:—

Near Thiaucourt (south-east of Lassigny) we brought down an Aviatik, which caught fire as it fell in front of our lines.

\* \* \*

The following is the French version of the Ludwigshafen raid:—

Eighteen aeroplanes started at 3 a.m. on the 27th to bombard the factories at Ludwigshafen. The Badische Anilin und Soda Fabrik, the most important explosives factory in Germany, occupies the whole of Ludwigshafen, near Mannheim, and a large addition was recently opened at Oppau, 3 kms. from Ludwigshafen.

The aviators dropped 47 projectiles of 90 mm. and two of 155 on the first objective, and 37 of 90 on the Oppau factory. All hit the mark. From 6.15 a.m. enormous fires with yellow smoke were to be seen at Ludwigshafen, and at 6.30 the aviators saw masses of smoke over Ludwigshafen and Oppau.

The aeroplanes were fired at, but all except one returned safely. The pilots state that the missing machine descended near Ludwigshafen, and took fire after it had reached the ground. It is believed that the descent was made safely and that the crew set fire to it, that it should not fall into German hands. The expedition, which shows high skill and courage of the French pilots, is the finest feat of the aerial arm so far accomplished.

[What about Friedrichshafen?—Ed.]

\* \* \*

A telegram from Hazebrouck to the "Petit Parisien" on May 24th says that a British aeroplane took fire and fell to the ground at Old Berquin, near Hazebrouck, owing to the motor exploding. The two aviators died of their injuries.

A Paris message on the 25th stated that a British officer, whose name was deleted by the Censor, was killed in an accident while flying to the estate of the Baron Henri de Rothschild near Paris.

Possibly the first message refers to the deaths of Lieuts. Bewes and Hyland, and the latter to the death of Lieut. Braithwaite.

\* \* \*

It is good news to hear that the Adjudant-aviateur Noël has now been awarded the "Croix de Guerre," which, it appears, comes automatically to any officer or man who is mentioned three times in army orders. This decoration is, perhaps, the most highly esteemed of any obtainable in the French Army. A star or stars attached to the ribbon of the cross indicated the particular grade of the award, but particulars of these grades are not forthcoming at the moment.

Adjudant-aviator Louis Noël, in addition to the Croix de Guerre, has been awarded the Médaille Militaire for exceptionally brilliant work, apart from having been mentioned three times in dispatches.

\* \* \*

Australian readers of THE AEROPLANE will be interested to hear that Capt. Oswald Watt, Australian Army, now with the French Flying Corps, has been awarded the "Croix de Guerre" for his exceptionally fine reconnaissance work. It will be remembered that he has already been awarded the Military Cross of the Legion of Honour.

It is interesting to learn that the new Nieuport biplanes, illustrated recently in this paper, are performing exceedingly well on active service in France. These machines approximate quite closely in their performance to the British "tabloids," and why anybody in their senses should bother about ordering such a particularly obsolete type of machine as the standard Morane monoplane, or even the "parasol," when the same amount of money and labour can be made into effective biplanes, it is hard to understand.

#### GERMANY.

The following notice was issued semi-officially at Königsberg on May 22nd:—

An airship broke away yesterday morning, and sailed away towards the west without any crew on board. News of the direction of its flight or its descent is to be sent immediately to the Governor of Königsberg. If the airship comes down, it is in all circumstances to be held fast, so that it cannot fly away again.

The airship was reported to have been sighted early on Saturday morning over Bütow.

\* \* \*

The communiqué of May 25th says:—

At Cambrai a French aviator dropped bombs immediately after church service, killing five French people and severely wounding twelve. Near St. Quentin we shot down an enemy aeroplane.

\* \* \*

The communiqué of May 26th says:—

South of Lens one of our airmen shot down a hostile aeroplane.

\* \* \*

The communiqué of May 27th says:—

A successful aerial attack was made on the fortifications of Southend, on the lower Thames.

\* \* \*

The communiqué of the 27th, published on the 29th, says:—

Eighteen French aviators yesterday attacked the open town of Ludwigshafen, killing and wounding several civilians. The material damage done was only slight.

An armoured aeroplane was forced to descend east of Neustadt. We captured a major, who was the leader of the air squadron of Nancy.

In an aerial fight near Epinal our airmen shot down a French aeroplane, and set fire to the barracks at Gerardmer.

\* \* \*

The communiqué of May 29th says:—

Our aviators threw bombs on the fortified places of Grave-lines and Dunkirk and on St. Omer, which is on the enemy's lines of communication. Hits were made in the hostile aerodrome north-west of Fismes.

\* \* \*

The following is a local account of the raid of the 27th according to a Ludwigshafen message to the "Kölnische Volkszeitung":—

About 7 a.m. yesterday five or six aeroplanes appeared over Ludwigshafen, the noise of the motors awakening such of the people as were not at work. The day was calm and clear. When the machines appeared anti-aircraft guns and machine-guns opened fire. The aviators circled over the town and the Rhine for 25 minutes, and then flew off westward. Many bombs were thrown. One fell in the house of Town Councilor Zeuch, in the Friesenheimerstrasse, killing three persons and wounding five, including Herr Zeuch. A second exploded in the Maudacherstrasse, killing three and wounding four. One aeroplane is reported to have come down near Griesheim through motor trouble. The occupants burnt their machine, and were taken prisoners. A number of bombs were thrown on the Aniline and Soda factory, five people being killed and fifteen wounded. Work was not interrupted.

\* \* \*

The correspondent of the "Daily Telegraph" at Copenhagen says:—

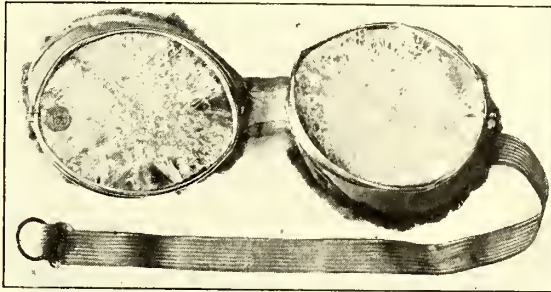
"A Zeppelin airship without a crew has been observed at Odense, Denmark, drifting in a westerly direction. She is the one which broke loose at Königsberg."

**Death Caused by Broken Eye-glasses.**—At an inquest at Westminster recently, a verdict was returned that death was due to wounds in the eye, caused by the breaking of the dead man's eye-glasses. A similar accident might easily occur with ordinary glass goggles, which is a point to remember in considering the advantages of the Triplex Safety Glass goggles, to which we recently referred, and thousands of which are being supplied for military purposes.—(MOTOR TRADER, May 29th.)

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[The Königsberg message does not say it was a Zeppelin, and it is more likely to have been a smaller craft, for no chances are taken with the big ships. Possibly inaccurate news-agency translation may have turned a "drachen-ballon" into an airship.—Ed.]

\* \* \*

The "Morning Post" correspondent at Berne reported on May 30th that although Germany pretends that little damage was done by the "waterplane" (sic) attack on Ludwigshafen, he learns on good authority that the damage to the aniline factory was considerable, and that four workers were killed and fifteen seriously injured.

[The first we have heard of "waterplanes" on the French Eastern frontier.—Ed.]

#### AUSTRIA.

The communiqué of May 29th says :—

On Friday night several naval aviators undertook a fresh action against Venice, dropping many bombs, especially on the arsenal, causing several large fires, and in Fort Nicolo an explosion.

#### ITALY.

The communiqué dated May 24th, and published on May 27th, says :—

Everywhere the enemy are retiring, destroying bridges. Our aviators are bombarding the electricity works and the railway station at Monfalcone. (Signed) CADORNA.

\* \* \*

The communiqué of May 27th, published on the 29th, says :—

During the night of May 26th a squadron of our airships effected a raid into the enemy's territory, throwing bombs on the Trieste-Nabresina line, and causing evident damage, and apparently an interruption of railway communication. Although subjected to violent rifle and artillery fire the squadron returned unharmed to our lines.—CADORNA.

\* \* \*

The communiqué of May 29th says :—

On the Friuli frontier on the night of May 27th-28th our airships carried out successful raids into the enemy's territory, causing serious damage. Many bombs which were dropped hit their mark. Our aeroplanes, which were the target of the enemy's fire, also accomplished their mission. On the night of May 27th-28th an enemy aeroplane marked "Pola," was forced to land near the mouth of the Po di Volano, and was captured.—CADORNA.

A communiqué issued on May 31st by the Chief of the Naval Staff says :—

Yesterday evening (May 30th) one of our airships flew over Pola and dropped bombs on the railway station, the petrol depot, and the arsenal. All the bombs exploded on their objectives, and a great fire broke out in the arsenal. The airship was subjected to intense firing from the anti-aircraft artillery, but was not hit at all, and returned uninjured.

\* \* \*

The "Giornale d'Italia (Rome, May 27th) publishes in a letter from Cormons the following note on the Italian advance across the frontier :—

"At nine o'clock the tricolour was hoisted over the church of San Giorno. At Brazzano an Austrian aeroplane from the aviation park at Gorizia was brought down by two rounds fired by one of our field batteries."

\* \* \*

A Rome message of May 28th says :—

Yesterday Naval Airship "M 2" flew over Sebenico and dropped bombs, which hit several destroyers anchored in a group at the mouth of the river Buduc. The airship was heavily shelled but without effect and returned uninjured.

\* \* \*

Now that the Italian air forces have fallen into the merciless hands of the daily Press, it is the more necessary for the educated to keep a serene and balanced mind on the subject, so that a little repetition of the real facts may be beneficial. Italy has 12 airships, 5 of which are of the small P series, and 3 of the medium-sized M series.

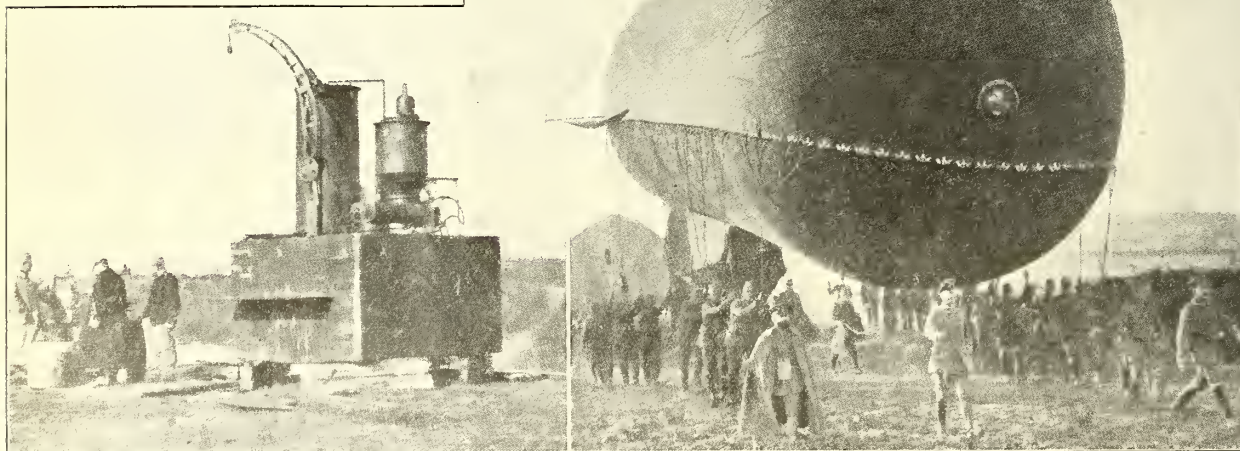
The remainder also under the Admiralty or War Office are : 1st, a V, purely a speed merchant and a unique vessel barely through her trials; 2nd, an oldish Parseval; 3rd, a Forlanini; 4th, a Usuelli, an auxiliary vessel of little account.

So that the "fleet of Forlaninis" alas only exists as a pious wish. It is even extremely doubtful that the one mentioned above, which has been reconstructed after having been burnt out last Spring, is as yet quite airworthy. She was a handsome ship which always looked well on paper.

M.2 is the naval dirigible mentioned in one of the earliest "officials."

M.3, too, has already been useful on active service over the Adriatic. She is the claimant to the post of record-holder for the world's altitude.

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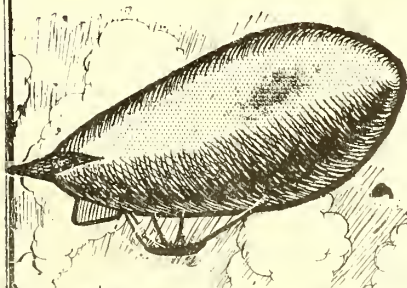
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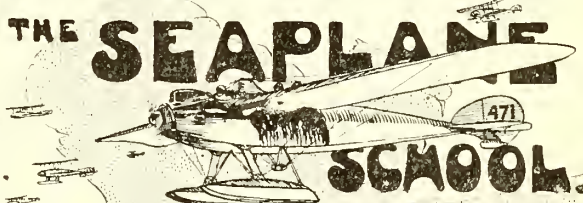


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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.



P.4 recently paid a visit to Asiago, which lies between 3,000 to 4,000 ft. above sea level, and was then wearing its winter snow-garments. This was a curious coincidence at least, for the place is now fortified and has already figured in reports.

The Parseval is said to be keeping its eye over the treasure city of Venice. A strange job for one of that name, but perhaps by now her "re-baptism" has occurred.—T. S. HARVEY.

#### BELGIUM.

The "Telegraaf," Amsterdam, May 31st, reports that on May 26th 19 bombs were dropped on the aerodrome at Gontrode, south-east of Ghent, by two Allied airmen. A French machine made the first attack, which destroyed part of a shed. The most damage was caused by the second attack, which caused great explosions, and from 60 to 70 German soldiers were hit by the bombs, 44 being killed.

When the first attack was made seven aeroplanes and one Zeppelin ascended, but were unable to beat off the second attack. The same evening, at 7 p.m., a second Zeppelin left Gontrode, going westward, and it is alleged that this was the airship that dropped bombs on Southend.

#### NORWAY.

Aeroplanes were put to a new, rather peculiar service on May 21st. Boys 17 to 18 years old at an education establishment, situated on an island, rebelled and set fire to a barn. When the masters would interfere, the boys put themselves in a posture of defence, so that the assistance of some soldiers of the neutrality guard had to be required. A number of boys escaped, but two army aeroplanes, which kept circling over the island, found every one of them out, and all were caught quick. Indeed, the case tells lessons of future utility of the aeroplane for chasing criminals!—Ht.

[A convict was caught in America in a somewhat similar way.—Ed.]

#### The Aeronautical Society.

The following official notice is published by request:—

The following appeal has been issued by the Society on behalf of the Edward Busk Memorial, and it is hoped that Members will not hesitate to send subscriptions however small.

EDWARD BUSK MEMORIAL.

Dear Sir (or Madam),

May, 1915.

There is a strong feeling among members of the Staff of the Royal Aircraft Factory, the Aeronautical Staff of the National Physical Laboratory, members of the Aeronautical Society of Great Britain, and of King's College, Cambridge, and relatives and friends of Mr. Edward Teshmaker Busk, late of the London Electrical Engineers, that a memorial should be founded in his honour and for the promotion of the study of aeronautics, to the advancement of which science he so largely contributed.

Mr. Busk was only 28 years of age when, on November 5th last, he died at Aldershot while flying his own stable aeroplane, owing to its destruction by fire, thus terminating a career already marked by fine achievement and full of

promise for the future. At Cambridge he took First Class Honours in the Mechanical Sciences Tripos, and was awarded the John Wimbourne Prize and a Scholarship at King's College. After passing some years as an engineer with Messrs. Halls & Co., at Dartford, he joined the staff of the Royal Aircraft Factory, where he devoted his time especially to the mathematics and dynamics of stable flight of the full-size aeroplane, to researches into the nature and cause of wind gusts, and to the uses of aircraft in warfare for offensive and defensive purposes. Besides this work he was entrusted with the general control of the chemical, metallurgical, and physical research and test work at the Factory.

The Council of the Aeronautical Society have unanimously decided to award to Mr. Busk their gold medal in recognition of his distinguished services to Aeronautical Science.

The Memorial will consist of (1) a Studentship to enable a student to carry on some research in aeronautics or a kindred subject; and (2) a Lecture on some such subject to be given annually by the holder of the Studentship or by some other Lecturer, and to be published in the "Aeronautical Journal."

Subscription\* to the amount of about £2,500 have been received or promised, and further contributions will be gratefully acknowledged by Sir Edward H. Busk, 11, Sussex Place, Regent's Park, N.W., or the Secretary of the Aeronautical Society of Great Britain, 11, Adam Street, Adelphi, W.C.

(Signed) R. M. RUCK, Major-General, Chairman of Council, Aeronautical Society of Great Britain.

MERVYN O'GORMAN, Superintendent, Royal Aircraft Factory.

R. T. GLAZEBROOK, Director, National Physical Laboratory.

M. R. JAMES, Provost of King's College, Cambridge, and Vice-Chancellor of the University of Cambridge.

W. H. MACAULAY, Fellow and late Tutor of King's College, Cambridge, and formerly University Lecturer in Applied Mechanics.

B. HOPKINSON, Fellow of King's College, Cambridge, and Professor of Mechanism and Applied Mechanics.

Members will kindly state when sending their subscriptions to which of the above purposes they wish their contributions to be applied.

BERTRAM G. COOPER (Secretary).

[With deep regret the writer is compelled to draw attention to the fact that this is not a matter which concerns the majority of those connected with aviation. Mr. Busk was, it is said, an estimable young man and an earnest worker, but in these days when the Nation's money is needed for those who are alive and fighting the Empire's battles, or for those who are alive and maimed after fighting in those battles, or for those who are left destitute because their bread-winners have died in those battles, it seems a mistake to appeal for subscriptions for a purely academic memorial.—C. G. G.]



Three of the Italian airships which are already doing good work against Austria. They are not Forlaninis, as the lay press seems to believe. They are M.3., the V.1., and P.3.



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## THE INVASIONS OF ENGLAND.

At about midnight on May 26th-27th a Zeppelin airship paid another visit to Southend and dropped about 30 bombs. It was stated that one fell on the head of a young woman alighting from a tramcar, and killed her; but at the inquest it was shown that she was killed by a splinter from a shell fired by an anti-aircraft gun. One house was set on fire. A boot-repairer's shop was hit and the owner's little daughter was so severely burned that she died. Two men were somewhat burned in removing a bomb and extinguishing a fire.

Otherwise there was little to show for the trouble of crossing the Channel. One does not refer to the risk of doing so, for there seems to be no risk to German aircraft, the risk incurred by British aircraft going up to attack being apparently greater.

After cruising around unmolested for some time the Zeppelin departed. A member of the staff of the "Shipping and Mercantile Gazette," writing in the "Morning Post," sizes up the final situation very neatly, thus:—

"Aerial peace once more reigned, and three hours later people began to think once more of going to bed. This course was not taken, however, before many fanciful and weird conjectures had been given expression and many marvellous observations had been exchanged. Most people, like myself, saw one Zeppelin, some saw two, some saw three, some declared there were fourteen waiting outside the town, having sent on a scout in advance. Some saw an aeroplane chasing the Zeppelin, some witnessed an actual fight in the sky—English aeroplanes and Zeppelins engaged in a quick-firing duel. Some . . .

"However, I only saw one. I saw it end on, I saw it broadside, I saw it hovering, I saw it to the east, I saw it to the west, I saw it to the south, and I saw it to the north, but it was the same one, and it was proving to me that whatever failures may have been recorded in the past history of Zeppelins, this one, at least, was complete mistress of the air. As I say, I saw one, and one only, and that one was enough."

One merely asks: Why was that Zeppelin mistress of the air?

Mr. H. Devitte, the "Express" correspondent at Geneva, reported on Sunday, May 30th, that news had reached Friedrichshafen that one of the Zeppelins which attacked Southend on Wednesday last was hit by a shell and was unable to reach home owing to loss of gas.

There is evidently some mistake here, for it is reported on good authority that none of the anti-aircraft shells went anywhere near the Zeppelin, and that, instead of making off due East, as some reports stated, she crossed right over the Isle of Sheppey towards Faversham and returned over Kent. No aircraft got within reach of the Zeppelin either, and the airship was obviously faster than most of the aircraft intended to catch her.

Obviously the whole system of Zeppelin-catching badly needs reorganising.

\* \* \*

The following official announcement was issued by the Press Bureau at 1.25 a.m. on June 1st:—

Zeppelins are reported to have been seen near Ramsgate and Brentwood and in certain outlying districts of London.

Many fires are reported, but these cannot be absolutely connected with visit of airships.

Further particulars will be issued as soon as they can be collected and collated.

The following notice was also issued by the Press Bureau early on June 1st:—

The Press are especially reminded that no statement whatever must be published dealing with the places in the neighbourhood of London reached by aircraft or the course supposed to be taken by them, or any statements or diagrams which might indicate the ground or route covered by them.

The Admiralty communiqué gives all the news which can properly be published. These instructions are given in order to secure the public safety, and the present intimation may itself be published by the Press as explaining the absence of more detailed reports.

The latter notice has germs of sense in it. If left to them-



Reproduced by courtesy of the "Daily Express."

"You bunglers! Only one English woman killed. Call that warfare?"

selves the papers would doubtless report exactly where each bomb fell, and so would act as "markers" for the bomb-droppers. There can, however, be no possible object in concealing the districts in which bombs were dropped.

On a bright clear night like that of Monday it would be quite easy to get a general idea of one's whereabouts, and any airship pilot could tell Woolwich from Walworth, or Shore-ditch from Streatham simply by the curves of the river, and he would know that the Admiralty is not in Acton or Buckingham Palace in the Borough. Therefore, though it might be silly to allow it to be said that a bomb meant for the Admiralty fell on the Eustace Miles Restaurant, there could be no harm in saying that several bombs fell at Tooting, for the Germans would know that much long before the rest of London outside Tooting could know.

The following statement was issued late on June 1st:—

Late last night about 90 bombs, mostly of an incendiary character, were dropped from hostile aircraft in various localities not far distant from each other.

A number of fires (of which only three were large enough to require the services of fire engines) broke out. All fires were promptly and effectively dealt with; only one of these fires necessitated a district call.

The fires were all caused by the incendiary bombs referred to.

No public building was injured, but a number of private premises were damaged by fire or water.

The number of casualties is small. So far as at present ascertained, one infant, one boy, one man, and one woman were killed, and another woman is so seriously injured that her life is despaired of. A few other private citizens were seriously injured. The precise numbers are not yet ascertained.

Adequate police arrangements, including the calling out of special constables, enabled the situation to be kept thoroughly in hand throughout.

**Concerning Bombs.**

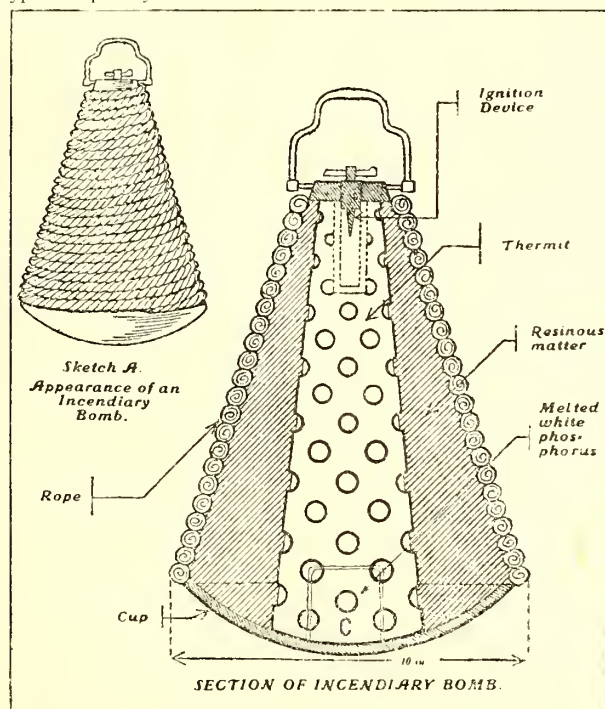
The British Fire Prevention Committee, a body founded in 1897 and incorporated in 1899, has issued a very sensible warning concerning possible fires due to air raids. The following notes are given as to the nature of the bombs which may be used and how to deal with fires arising therefrom.

Buckets of water (supplemented where feasible by ordinary hand pumps) are recommended as the most suitable and economical fire appliances, and, where oil or spirit is used, buckets of sand. Household-ers are advised not to wait until a fire occurs to find the best way out in the dark, but to think of a couple of ways out beforehand. If there is dense smoke from a fire people should remember that the air is clearer near the ground, so they should crawl on the floor, with a handkerchief, wet rag, or respirator in front of the mouth. They should ascertain the quickest means of obtaining assistance from the Fire Brigade and Police, and should post up the necessary particulars, nearest fire-alarm, etc., on the ground floor. They should not run or shout, but keep calm as an example to others.

The ordinary explosive bombs employed by the enemy rarely cause a fire per se, but where a building is injured or collapses fires are frequently caused by open lights or fires, etc., and their spread is assisted by escaping gas from broken mains or arcs from broken electric cables. Fires thus caused indirectly by explosive bombs can as a rule be dealt with as ordinary fires in their incipient stage. Any gas or electrical supply not cut off prior to the outbreak should, if possible, however, be cut off at the earliest possible moment.

The incendiary bombs readily fire buildings and their contents owing to the fierce nature of the flames and the molten metal generated by the chemicals used. Fires caused by incendiary bombs may be prevented from spreading, regardless of the high temperature generated at the actual seat of the outbreak, if water be promptly applied in fair bulk, force and continuity, say from a series of buckets energetically thrown, or hand pumps vigorously worked. Sand or loose soil similarly thrown might be useful in the absence of water, but would not have the necessary cooling effect. The application of single buckets of water, single shovels of sand, etc., would be comparatively valueless, a concentration of the available liquid first-aid appliances being required to obtain the necessary result.

In order to deal with fires from incendiary bombs, their make should be understood and the following describes one of the types frequently used:—



(a) The bomb, as a rule, is conical, of 10 inches diameter at the base, corded round, and has a metal handle at the apex (see A).

(b) The base is a flat cup, on which a pierced metal funnel is fitted, having the ignition device and handle fitted at the top.

(c) The funnel is generally filled with Thermit, which upon ignition generates intense heat and by the time of the concussion has taken the form of molten metal of the extraordinary high temperature of over 5,000 deg. Fahr. The molten metal is spread by the concussion.

(d) Outside the funnel is a padding of a highly inflammable or resinous material bound on with an inflammable form of rope. The resinous material creates a pungent smoke.

(e) There is generally some melted white phosphorus in the bottom of the cap which develops nauseous fumes.

(f) In some cases celluloid chippings are added and occasionally a small quantity of petrol.

The fumes of the bombs are generally very pungent, and a simple form of respirator (that can be readily damped) should be kept handy and used where necessary. Firemen and others whose duty it is to attend incendiary fires would do well to carry simple respirators in their uniform.

Should definite information be received of the approach of hostile aircraft or actual bombardment commence in the vicinity, refuge should be promptly taken in the cellar, basement or lower floor. All gas lights or stoves should be turned out, and the gas supply turned off at the meter. All electric lights should be switched off, and the supply turned off at the main switch near the meter. Further, if time permits, all oil lamps should be extinguished and taken into the cellar or basement. All open fires above basement level should be extinguished. All doors should be closed. All windows should be closed, also shutters where such exist.

The offices of the Committee are at 8, Waterloo Place, Pall Mall, London, S.W., and any technical inquiry regarding special precautionary measures during the war will be dealt with by the British Fire Prevention Committee upon written application.

**Some Pertinent Questions.**

A correspondent writes:—"Why not tell your readers a few of the reasons why enemy aircraft are allowed to escape scot free after a raid? I can guess that when only one appears it might happen that more damage would be done by the shells from anti-aircraft guns than by the Zeppelin bombs, but the public don't know that. And what about our aeroplanes?"

"I remember some time ago there used to be a considerable amount of absence about our aeroplanes. And it seems possible that as many as several may have been punctured in France. As Tweedledum might have said:—

'No 'planes were flying overhead,  
'There were no planes to fly.'

"Only I can't believe that is the reason. Anyhow, I feel sure that many good people would be a great deal comforted in their minds if they were informed by a person of your importance that when the raid on London does take place our visitors will receive a reception worthy of them."

We all hope so, of course, but not being in the confidence of the authorities the editor of this paper hesitates to pledge himself to any statement in the nature of a prophecy which may not be fulfilled. Perhaps by the time these notes appear we may be told of a massacre of Zeppelins at the mouth of the Thames. Or perhaps not.

**The Flying Services Fund.**

The Flying Services Fund instituted by the Royal Aero Club for the benefit of officers and men of the Royal Naval Air Service and the Royal Flying Corps who are incapacitated on active service, and for the widows and dependants of those who are killed, has now reached the handsome total of £9,005 5s.

The Fund is intended for the benefit of all ranks, but especially for petty officers, non-commissioned officers and men. Forms of application for assistance can be obtained from the Royal Aero Club, 166, Piccadilly, London, W.



## Aero-motors: In Kind and Construction.—(Continued)

BY GEOFFREY de HOLDEN-STONE.

So far, apparently, construction rather than kind is the strong feature of the Sunbeam aeromotors in most details. As one sees—and, indeed, expects in any motor—the water circulation, with its gear-driven pump, is conventional enough: albeit the train of spur gearing which drives it, firstly, the wireless installation, secondly—through the medium of the two-to-one intermediary gear—and the two magnetos direct, finally, is a very pretty piece of work, adequate and appropriate in all respects. In no circumstances, I think, or for any motor, could this particular fitment have been better designed.

But in this matter of water-circulation—especially in view of big motors like the Sunbeam, and the coming demand for still bigger which must be water cooled—I cannot help recalling one device of a few years ago, before aeroplanes or aeromotors existed except as pipe-dream fantasies, which was literally inspired for their needs—as it not only did away with radiators, but cooled the water better—and therefore ought to be revived.

### A Needful Gadget: Quite Unrelated.

Invented by M. René Lahaussais, of the Société Anonyme Rex, it had some dreadful name like "frigorificateur," but it consisted simply of a rather large double-chambered rotary pump, of which the rotary in the first chamber drew the hot water from the motor, and delivered it to the rotary in the second one, into the drum of which a series of little air injectors were inserted radially and at a slight tangent. These little injectors, at the wider, open end, contained little screens of fine metal gauze or perforated metal, which broke up the air; and the diameter at the inserted end being reduced to the finest pin-hole, the air particles were drawn in at high velocity to aerate, emulsify, and thus cool the water with great rapidity and thoroughness, as it was churned to the exit and delivery to the motor. On the delivery tube itself a little pressure-valve was set at an acute angle to the stream, just enough to relieve the accumulation of air without allowing any of the water to leak.

And that was all. Just one of those little things that were created too soon for the revolutions they might have wrought.

I saw it delivering itself hour after hour to a Rex motor harnessed to a dynamo as an electrogène—which work is exactly the same as an aeromotor's. Even its persistent shriek of success—which perhaps damned it to the "luxus-automobil" mind—could easily have been silenced by shrouding its injectors bodily with a larger surrounding drum of light metal. So much for the Paris Show curiosity of eight years ago, the immediate jewel of to-day's need.

### Some Oil-Pump Detail.

Again, seeing that lubrication is the soul of aeromotor trustworthiness, not only the design but the position of the Sunbeam oil-pump seems above criticism. Carried as it is below a downward extension of the crank-pit, not only is every bit of excess oil bound to drain into it, but its position and attachment makes it more than commonly accessible for cleansing.

The detail of having the drain or collector-gear-pump on the same spindle but below the upper driven one—which is actually the distributor or oil-delivery pump—is also particularly effective, as it leaves a blank or cavity enabling the driving-gear pump to pick up the collected oil and pass it on to the distributor.

Otherwise, the design is as one might expect, the main spindle being rotated by skew gearing from the cam-shaft. The upper body of the pump is a bracket-like casting with a tubular hollow from which the oil distribution starts via the feed-pipe to the middle of the cam-shaft; through a second tubular arm of the casting to the main oil-duct, and so to all the crankshaft bearings and the thrusts of the reduction-gear of the propeller stub-shaft.

Lowest of all in the pump mechanism is placed the encased filter, through which the main oil supply from the tank is drawn into the body of the pump. A relief connection to the oil-tank is set on the main duct at a point opposite the second rear journal; and at the extreme rear end of the duct a connection to a pressure-gauge.

So much for the mechanical detail of the Sunbeam lubrication system, the functional result of which, however, after having lubricated the main journal bearings, is to transmit

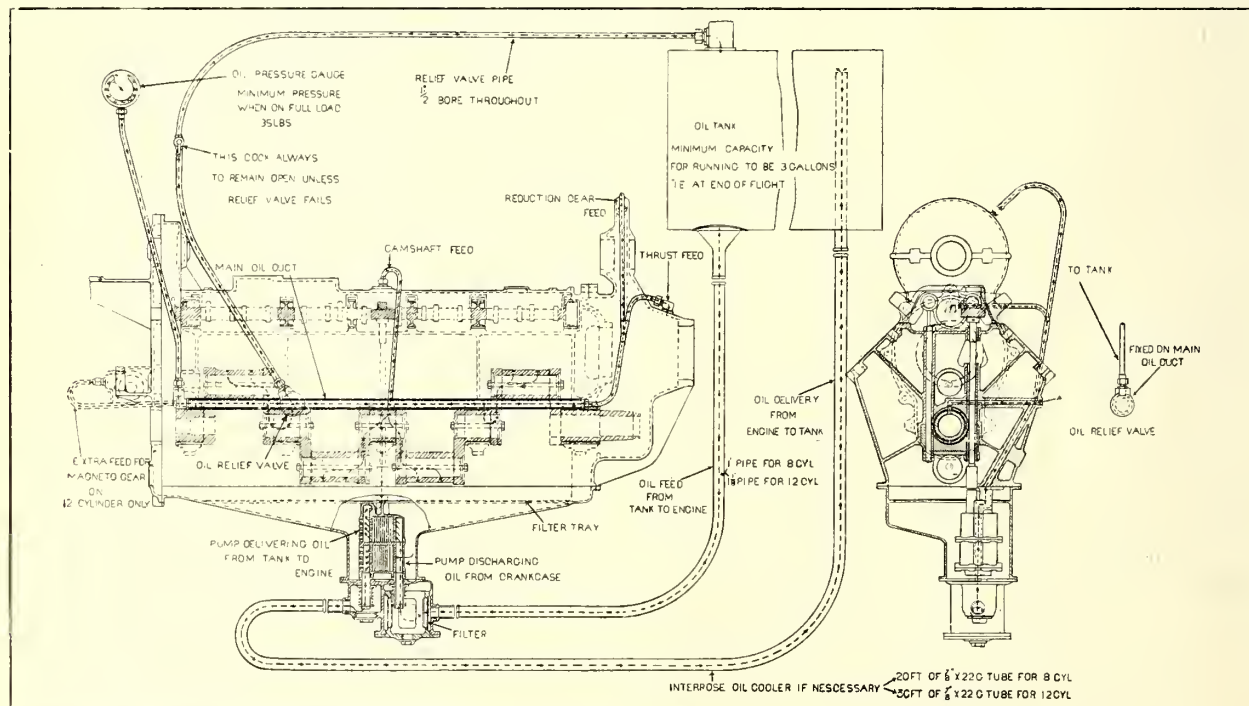
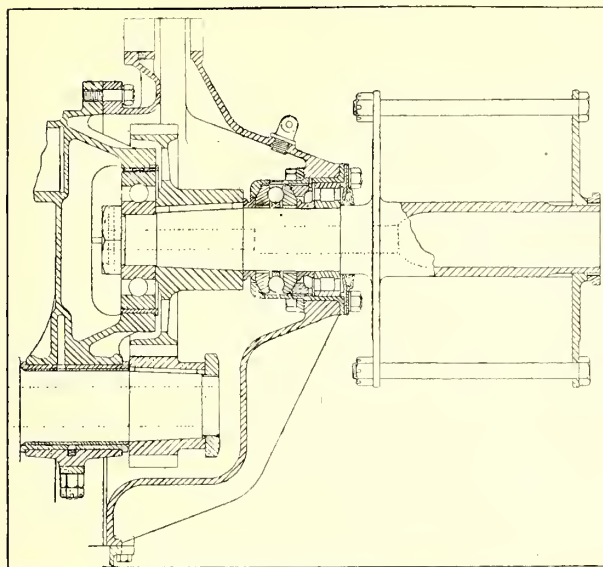


Diagram of the oiling system of the 8-Cylinder Sunbeam-Coatalen Aircraft Engine.



**The Reducing Gear of the Sunbeam.**

the oil under pressure through the hollows of the crankshaft to the connecting-rod big ends, from which the oil is finally splashed on the cylinder walls.

Here one notices that the system stops a stage short of the method of De Dion, Maudslay, and others, whereby the oil is carried further through leads in the connecting-rods and gudgeon-pins.

Personally, I prefer this latter method, if only that it lightens these parts, and—if the leads be only drilled large enough—ensures such copious cylinder lubrication at the upper part where it is most needed that piston seizure is practically out of the question.

These are advantages, I think, which well outweigh any possible savings in oil consumption which are no doubt effected in the Sunbeam way, or even the non-exposure to heat that is claimed, justifiably enough.

Suffice it, nevertheless, that the Sunbeam system is efficient, and that no pains have been spared to make it so; albeit the principle of using the oil "over and over again" according to the book, is one that bears close watching, to say the least, and still more careful selection of the oil used.

Pretending to know some few little points about petroleum products, after twenty years, I maintain that the best cylinder oil and the best for bearings are hardly the same things. Which makes the best choice of the compromise-lubricant none the easier.

#### **The Star Point.**

Beyond the foregoing details, the chiefly notable feature of the Sunbeam design is the final drive to the propeller, with its two-to-one reduction of shaft speed. The Renault and De Dion method—which may be mentioned as these were perhaps the best known V-type motors prior to the Sunbeam—is to carry the propeller on an extension of the cam-shaft.

This, no doubt, would be an excellent way if the propeller shaft were the main piece, carrying not only the reducing gear, but ample thrust-bearings on either side thereof, the cam-shaft being merely its tail, the various bearings of which, though lighter, would have a final steadying effect on the whole, setting up less wear, and dispersing all propeller and other vibrations to nothing.

Unfortunately, the Renault-De Dion arrangement is quite otherwise. The gear drive is on the other end of the cam-shaft, which somewhat essential piece, one would imagine, would therefore be liable, like the historic Irishman pitched out of the car, to be "faatally twishted," if not "murdered entirely."

This, at least, the Sunbeam system avoids—although there is not even a free dowel-connection between the two shafts—by mounting the propeller shaft in rather extra-sized ball-

bearings, with a special thrust-bearing that allows the motor to be used either for traction or propulsion without affecting its efficacy, much less its design.

Probably some slight percentage of developed power is lost by this gearing transmission. But that is far outweighed by the steady running of the motor as one of a high-speed type, which is further reflected in the unusually even torque imparted to the propeller shaft.

Furthermore, while the reduction to half-speed—or even less if specially demanded—enables a large propeller to be used with far greater efficiency in the equation of traction or propulsion to a given horse-power, it is obvious that the whole flexibility range of the motor goes to the benefit of the propeller, in regard to the control of its revolution speed to a finer degree. And this result, one may fairly argue, should be directly reflected in the increased efficiency of the aeroplane itself, as to its speed range under actual power. And as this is the chiefly-besought advantage, not only for experimental aero design, but for the long-ranged, powerful, speedy and crew-carrying cruiser-plane—which is the type of aircraft of the most immediately desirable future—it follows that this system of gear-reduction is really the most effective feature of the Sunbeam design—or, for that matter, any other V-type motor. This, too, is quite apart from the inherent advantages such as balance and elimination of couple, compactness for power developed, and concentration of weight within reduced limits—the great point for aircraft work—which are peculiar to the type.

*(To be continued.)*

#### **In Memoriam Gustav Hamel.**

A year has elapsed since the death of Gustav Hamel, one of the most striking personalities of modern times. It may be remembered he fell into the Channel, after leaving Hargreaves on May 23rd, 1914, his body being found some months later. Since the outbreak of war his name has flashed across the minds of many of us, with a deep regret that his brilliant services were not at the disposal of Great Britain, as they would undoubtedly have been had he lived.

It is worth while recalling the fine epitaph contained in the announcement issued by the Admiralty, when it had been decided to abandon the search which had been made for him:—

"He was without question the foremost exponent in these islands of an art whose military consequence is continually increasing. His qualities of daring, skill, resource, and modesty merited the respect of those who pursue the profession of arms."

As he had, some time previously, applied to be appointed to the Reserve of the Royal Naval Air Service, and had been accepted, though not definitely appointed, we may imagine how enthusiastically he would have thrown himself into the duties which would have been allotted him, and how well he would have distinguished himself in the element for which he seemed to have been born.

Into a few short years he had crowded countless adventures, and probably no aviator ever had or will have so great a hold on the popular imagination. The exhibitions of his skill and fearlessness, given before crowds in all parts of the kingdom, were a revelation to the public, who had been slow to realise the progress of flying. His thrilling feats were at first attributed largely to the recklessness of youth, but before long it was seen that he did strange and wonderful things which might have been rash in others, but to him were deliberate and reasoned expositions of the possibilities of an aeroplane.

Gustav Hamel looked far ahead. His prophecies as to the uses of aircraft in war, to which a chapter is devoted in the fascinating book published shortly before his death, jointly by Mr. C. C. Turner and himself, are being fulfilled to a remarkable degree. He foresaw the problems which would arise, and the developments which would take place in the event of war, and the perusal of this chapter increases one's regret that he did not live to assist in the great struggle. He played a big part in the early history of aviation, and his memory lives for ever.

D. W. T.



### A Simple Insurance.

The importance of using goggles that are safe to wear was emphasised recently at an inquest held at Westminster on the body of Henry Herbert Barlow, a clerk who died as the result of a collision with a van while riding a motor-cycle near Richmond. Death was due to wounds in the eye caused by the breaking of his glasses.

When one remembers that Triplex Glass cannot splinter one sees one way of assuring safety in this respect, and it is therefore quite natural that Mr. Reginald Delpech of the Triplex Co. can say that he is supplying literally thousands of pairs of goggles to motorists and aviators of both Services.

Drivers of transport cars and light tenders find them useful as a guard against the danger of stones thrown up by other cars when travelling in close company at high speeds, as is often necessary, and as the price of the Triplex Safety Goggles varies all the way from 6s. to 12s. 6d. a pair, it is not surprising that men as well as officers are buying them in quantities.

### The Spring Firm.

Firms building aircraft which include in their design the use of any spring work will doubtless be glad to know of a firm whose experience guarantees that their output is of the highest class. The Oldbury Spring Co., of Fountain Lane, Oldbury, near Birmingham, has for many years specialised in springs of all kinds, their activities ranging from spring mattresses and springs of all kinds for doors, bells, lamps, bicycle brakes, bicycle saddles and so forth, up to springs for the various parts of motors.

In the making of valve springs, and those of types which need particular accuracy and quality, the firm has been highly successful, and, therefore, makers of aero engines and those who wish to acquire stocks of valve springs for replacement will find the Oldbury Spring Co. a very useful source of supply.

### To Repair an Omission.

Owing to a typographical omission the name of the photographer responsible for the groups of the R.N.A.S. officers and men at Roehampton and Isle of Grain was omitted recently. As in the case of the great majority of Flying Service portraits, these were taken by Mr. F. N. Birkett, 97, Percy Road, Shepherd's Bush, W.

The photographs of the Northern Aircraft Co.'s School, Windermere, published last week, were taken by Herbert and Son, of Bowness on Windermere.

### An Error.

Owing to an error in transcription in the inscription to the photographs of various new pilots published last week, Mr. Kenworthy was described as being a pupil at the Beatty School, when he was in fact trained at the Ruffy-Baumann School.

### The Week-end at Hendon.

The weather on Saturday looked about as reliable as a Wolff Bureau telegram, and the attendance at Hendon was not as large as it otherwise would have been. The rain, however, kept off, in spite of the often-threatening aspect of the sky, and those visitors who turned up saw plenty of flying. It is to be hoped that the dyspeptic individual who wrote bitter complaints to the daily Press because nobody was anxious to break up a machine or risk a neck in the high wind on Whit Monday was somewhere in the enclosures. The man who does not read the notice prominently displayed outside the aerodrome, stating that flying is not guaranteed, and who does not realise that the breeze which playfully disturbs his moustache in Colindale Avenue is probably blowing also inside the aerodrome, and who overlooks the fact that pilots who have important work to do at Hendon are not justified in taking unnecessary risks to amuse the general public, ought to seek his Bank Holiday recreation on Hampstead Heath among the cokernut-shies.

The first machine out on Saturday afternoon was a Grahame-White biplane flown by Mr. Manton. He made several flights later on, as did Mr. Winter, of the same school. Mr. Baumann, who will soon be known as the wholesale instructor, from the long list of successful pupils he is piling up, was out

on his 60-h.p. Caudron, and Mr. Virgilio was flying the 50-h.p. Caudron and making the most of the apparently limited time which remains before he is called back to his native Italy.

Mr. Roche-Kelly made several flights, with and without passengers, on a 60-h.p. Beatty-Wright. The big Grahame-White five-seater—specially recommended for family parties, catering by arrangement—was twice in the air, the pilot being Mr. Osipenko, and the cargo, if one may use the term, consisting of three passengers each time. There still seemed to be room for another fifty horse-power or so.

Mr. J. H. Moore also flew on the 45-h.p. Caudron which has been specially built for him—and very well built too—by the London and Provincial Aviation Company.

On Sunday the wind was erratic, but a very fair amount of work was done. Mr. J. L. Hall made a long flight in a Caudron, reaching a height of about 2,000 feet. Mr. Roche-Kelly again gave exhibitions on a Beatty-Wright, Mr. Winter and Mr. Osipenko were out, and Mr. J. H. Moore again appeared. After tea Mr. Manton brought out the Grahame-White 100-h.p. monosoupape scout.

Among the visitors we noticed an old friend, Mr. Jules Nardini. The entry of Italy into the war gives him an opportunity to take a hand in international affairs for the second time, and he will doubtless be heard of again very soon.—D. W. T.

### School and Weather Reports.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
East Coast ...	Fine & Windy	Fine Windy	Fine Windy	Fine Windy	Fine Windy	Fine	Fine
Hendon ...	Fine Windy	Fine Windy	Fine Windy	Fine Windy	Fine Calm	Fine Calm	Fine Windy
South Coast...	Fine	Fine	Fine	Fine	Fine	Fine	Fine

**Hendon.**—AT GRAHAME-WHITE SCHOOL, week ending Saturday, May 22nd (delayed in transit). Instructors for the week: Messrs. Russell and Winter. Pupils with instr. on machine: Prob. Flight Sub-Lieuts. De Roeper, De Ville, Leigh, Simpson, Smylie. Strts. or rolls alone: Prob. Flight Sub-Lieuts. De Ville, Simpson, Smylie, De Roeper. 8's or circles alone: Prob. Flight Sub-Lieuts. Greer, Wain, De Ville, Smylie.

A certificate was taken during the week by Prob. Flight Sub-Lieut. Greer. The machines in use were, as usual, Grahame-White biplanes.

**Hendon.**—AT THE GRAHAME-WHITE SCHOOL.—Instructors: Messrs. Manton, Russell and Winter. Pupils with instr.: Prob. Flt. Sub-Lieuts. Blackburn, Leigh, Simpson, Pennington and Wyllie. Strts. alone: Prob. Flt. Sub-Lieuts. De Roeper and Simpson. Half circles: Prob. F. S. L. Simpson. Circs. with instr.: Prob. Flt. S. L. Smylie. 8's and circles alone: Prob. Flt. Sub-Lieuts. De Roeper and Smylie. Certificates were taken during the week by Prob. Flt. Sub-Lieuts. De Ville and Wain, Prob. Flt. Sub-Lieut. De Roeper, Test A. Machines: Grahame-White biplanes.

**AT THE BEATTY SCHOOL OF FLYING, LTD.**—Instructors for the week: Messrs. G. W. Beatty, W. Roche-Kelly, C. B. Prodder, and Bransby Williams.

Pupils with instructor on machine: Messrs. Chalmers (35 mins.), Chapelle (15), Crossman (12), FitzHerbert (18), Johnston (10), Morgan (10), Ross (32), Rutherford (10), Tomlinson (40), Vickers (10), Whincup (10), Broughton (20), King (18), Jones (25), Eaton (38), Fox (18), Arbon (10), Fawcett (10), Holland (10), Zimmermann (10), Bush (10), Gurney (10), and Watson (23).

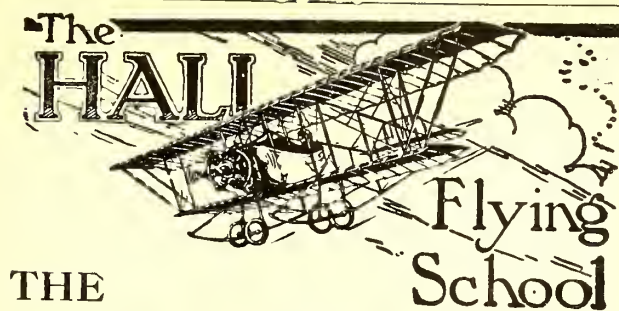
Mr. G. Chapelle took an excellent ticket on Saturday on a 45 h.p. Caudron.

Machines in use: Beatty-Wright dual control and single-seater biplanes, and Caudron tractor biplanes.

Exhibition flights were given by Messrs. Roche-Kelly and Prodder on Saturday and Sunday, and three passenger flights were taken during the week.

**AT THE LONDON AND PROVINCIAL SCHOOL.**—Instructors for the week: Messrs. M. G. Smiles, W. T. Warren, J. H. Moore, W. D. Smiles.

Pupils with instructor on machine: Messrs. Irwing, Gunner, and Bell.



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Figures of 8 alone: Mr. Turner.

Machines in use: 3 L. and P. biplanes.

Mr. Moore gave exhibitions on Saturday, flying well, his L. & P.-Caudron (45-h.p. Anzani) climbing excellently.

AT THE RUFFY-BAUMANN SCHOOL.—Instructors for the week: Messrs. Baumann, Ruffy, Virgilio and Winchester. Pupils: 25th (Tues.), E. Baumann on 60 Caudron type with Chappelle (20 mins.), Broughton and Blandy on 60 Caudron type. 26th (Wed.), Chappelle, Hudson, and Wallis for 15, 8, and 12 mins. respectively. On 50 Caudron type: Broughton, Blandy, Hubbard, Robertson and Brand. 28th (Fri.), Broughton, May and Brand on 60 Caudron type. Chappelle, Blandy and Broughton. 29th (Sat.), Broughton went for half of his test for R.Ae.C. certificate. Blandy, May, Cole and England-Derwen on 50 Caudron type. All Sunday and Monday during daytime much constructional work was put in and pupils had splendid opportunity of gaining inside knowledge of aeroplane engineering and building work.

On Saturday afternoon M. Baumann carried passengers and gave several excellent exhibition flights, while Mr. Virgilio played joyfully with 50 Caudron, performing his usual switch-backs.

AT THE HALL SCHOOL.—Excellent work was put through. Mr. Cecil M. Hill, a well-known West of England motor engineer, who took his Royal Aero Club Certificate in wonderful style, attaining the good height of 2,200 ft. with a glide from 1,500 ft. The other pupils are also progressing very well with Instructor Herbert James (who has joined as second instructor). Messrs. Snook 36, Hamer 18, Mason 21, Hatchman 29, Snowden 22½, Booker 15, Millbourne 15, Bayley 36, Lieut. Raymond-Barker 15, Lieut. Jowett 15, and Mitchell 20, With Mr. Stevens on 35-h.p. tractor No. 1: Messrs. Furlong 55, Minot 47 and Hill 35, all doing good straight flights and half circles. With Mr. Stevens on Brevet tractor No. 2: Cecil M. Hill 5 circles, and 3 figs. of "8" afterwards qualifying for brevet taken on Sunday in excellent style. Two new 2-seater machines are now nearing completion at the works, besides a single-seater which will be commissioned in a fortnight's time. Machines: Nos. 5, 2 and 1 Hall tractor biplanes.

Windermere.—AT THE N.A.C. SCHOOL.—Pupils with instr.: Messrs. Hume, Perrett, Graham, Clifford, Hodges, Yates and Laidler. Flt. Lieut. Atherton flying alone. Two monoplanes at work in high wind all the week. Messrs. Ding and Parker instructing.

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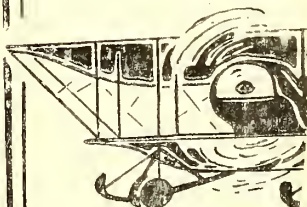
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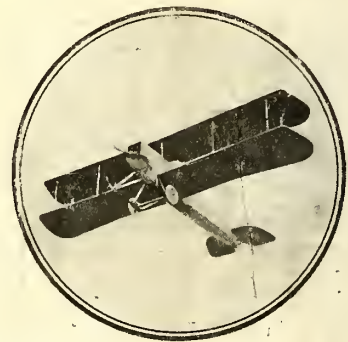
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"THE AEROPLANE," JUNE 9, 1915.

# THE AEROPLANE

1<sup>d</sup>  
WEEKLY

Edited by C. G. GREY. ("Aero-Amateur")

VOL. VIII. [REGISTERED AT THE G.P.O.  
AS A NEWSPAPER.]

WEDNESDAY, JUNE 9, 1915.

No. 23

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## On Relative Values.

Among the curious views seen of late an extract from a letter which appeared in the "Morning Post" on May 12th, apparently written by a *pukka* soldier belonging to the Lahore Division now in France, deserves particular note. This officer writing of the heavy losses of various Territorial Battalions near Ypres recently says:

"I can't help thinking that all these losses amongst officers of the T.F. is going to be a serious thing for the country, as many of these fellows are heads of large commercial or professional concerns, and it will be a very serious knock to many businesses. This is where the T.F. officer differs from the Regular. The Regular is not allowed to do any form of business; it is just as hard on those dear to him to lose him, but the loss is personal, whereas the loss of a big business man is, in a degree, national. Still it is necessary. But the nation is sacrificing the best of its men out here, because it is the best of its men who have gone into the Service because they realise what the German menace means, and what would happen to our own land if we ever had the Germans in it."

Everyone, of course, recognises the splendid way in which the Territorials have fought, as was expected by anyone who considered that a young man only enlisted in the "Terriers" if he had some real sense of patriotism, or a real love of the art and science of soldiering, for the football-match, pub, and cinema lounge could not, naturally, spare time to attend boring things like drills and camps. In fact, the average Terrier in the ranks is, if anything, a keener soldier and of better social class than Mr. Thomas Atkins of the old Expeditionary Force, though, owing to lack of training, he could not be so good a soldier till he had been on active service for some time.

The Territorial officer also must be keen on his work if he is to give up golf and cricket in the summer, and bridge and billiards in the winter, for drills, rifle-practice, lectures, and so forth, though there were certainly some who joined for the sake of playing at soldiers.

With so much keenness existing it is all the greater pity that the higher authorities at the War Office never made any attempt to encourage the formation of Territorial Squadrons, or even Flights, of the Royal Flying Corps. On the contrary, they have on various occasions effectively squashed any attempt to form such auxiliary sections of the Corps—as when Liverpool offered to raise a squadron, which, if it had been encouraged then, would have provided very useful assistance at the present moment.

The fine work done by Territorial and Special Reserve officers now in the R.F.C.—several of whom have been given commissions in the Regular Army—shows the material available if it had been properly and intelligently used.

That, however, is not the real point of the quoted letter. Nevertheless, it shows the ineptitude of the authorities before the war, and how they refused to see the mess they were getting themselves into, though, goodness knows, some of us rubbed their noses into it hard enough, and got ourselves correspondingly disliked.

### Business Methods.

The most curious thing about the letter is the modest assumption by a trained soldier that a business man is of more value to the nation than a trained soldier descended from generations and generations of fighters.

Business men are easy enough to find. At any rate there are heaps of men who can run a big business and make money, which is presumably the criterion by which a successful business man is judged, though in point of fact when one comes to look into the methods of the average English firm one finds it as hide-bound, conservative, and red-tape-entangled as the War Office itself, or the Admiralty. Which, after all, is not surprising, for those who know anything of the internal mechanism of the administrative departments of the Services know that their time-wasting, money-devouring methods are entirely due to the stupidity of the civilian officials who tie the office-work into knots which no simple-minded sailor or soldier can unravel, and few have the power to cut.

It is the business man at the Admiralty who makes it necessary for an officer of the R.N.A.S. at an Air Station who wants a square yard of aluminium sheeting to send an order to the dockyard at Sheerness, which, on finding it has not the right thickness in stock, has to refer back to the Admiralty, which has to try Portsmouth Dockyard, which, not having it either, refers back to the Admiralty, which refers to Devonport, which refers back again to the Admiralty, which sends out a form for tenders to half a dozen firms of contractors, who reply in the usual English way, in a week or two, so that, after careful consideration by the Contracts Department, the contract is duly placed for "Aluminium, one sheet, one-sixteenth of an inch thick, 36 inches long by 36 inches wide," which in due course is delivered, with luck, eight weeks from the submission of the original requisition, when the officer who originally wanted it has forgotten all about it, and has either used a piece off the wreck of another aeroplane, or has stolen a panel out of the body of a Service motor car, or has gone without and covered the hole with fabric or three-ply wood, and has flown away and dropped bombs on Bosch, and won a D.S.O., and been wounded, and sent home, and cured, and gone back to duty again on another machine in another part of the world.—The which is rather a long sentence and expresses exactly the long-winded methods of the English business man, and the influence his business methods have on the Services.

### The Military Class.

Anyhow, business men are easy to replace, and the fighting officers are not. The commercial, money-making classes can afford to indulge in large families, the old fighting clans cannot. Look at the Obituary Columns and see how many times "only son," or "only child," appears in recording the deaths of sons of retired officers, and how seldom one sees it connected with names of business men. The old naval and military families are few in number compared with the commercial families, consequently the loss to the Nation of one of their sons is a far greater calamity than is the loss of half a dozen business men.



One has only to look at some of the recently appointed officers to see the difference in quality, and if one wants definite proof one need not go further than the Flying Services. As, for instance, the action of certain "probationers" for the R.F.C. who, when they saw a fairly experienced officer killed in an aeroplane accident at home not long ago, packed up their traps and went off to withdraw their applications for commissions, deciding that flying was too dangerous a service for them and involved too much risk to their business-like necks.

Naturally the R.F.C. is well rid of them, but there are others in both Services who, if they are not cowards to the same degree, are quite as undesirable as officers. In some cases even worse, because besides being physical cowards they have not the moral courage to admit that they are afraid. That kind of pilot is a constant danger because he may survive his early stages and end by killing a valuable observer on active service. Also, there are others eminently unsuited to hold the King's Commission at all, and whose presence can only tend to lower the tone of the Services.

#### Undesirables.

How some of the appalling "stiffs"—to use the current term for the species—who have been given commissions lately in both Flying Services ever managed to win through even a cursory examination, passes human comprehension, especially when there are heaps of men in the non-commissioned ranks who happen to be gentlemen and to have brains as well, let alone quite a fair number of decent men who have been refused commissions because of some slight physical defect. An altogether unseemly number of the newest appointees seem to belong to what Mr. Ian Hay, one

of our newest but most knowledgeable authors, tersely describes as "that class of society which undergraduates and other healthy and outspoken Philistines designate simply and comprehensively as 'Tishbites,' or 'Tishes.'"

One of the neatest references to the new kind of officer was that of a Brigadier who remarked to a friend of mine that he would rather talk to any "decent warrant officer than these T.G.s," whereon my friend asked, humbly, what T.G.'s might be. "T. G.'s! Why, 'temporary gentlemen,' of course. The kind of blighters the W.O. send me for officers!"

Apparently the idiotic theory still survives that a man is too old at thirty if he wants to fly, and that a howling little bounder of twenty is going to make a better officer-aviator than a thoroughly sound sportsman of thirty-one or thirty-two.

The youngster may fly more recklessly till his nerve breaks, just as a mongrel dog will go yapping into fight after fight till he gets a damned good hiding, but he will never make an officer and he will never fly after he has had a bad smash in the way the better class men will do. Blood tells in a man as much as it does in a horse or a dog. Many a good 'chaser has come out of the shafts of the old horse-cabs, where it had found its way by bad luck, and many a better officer-aviator can be found in the ranks than among the brats of well-to-do shopkeepers, and business-like merchants and lawyers, such as are now entitled to swagger round in uniform and "draw" salutes from their social, mental, and moral betters who were so foolishly patriotic as to go and enlist early in the war in the hopes of seeing active service without waiting for months at home, and who are still patiently waiting.

## On Increasing Output.

Some of the foregoing remarks apply also to recent appointments among Admiralty inspectors. Batches of R.N.V.R. commissions have been given to people who, if one may judge by their accent and behaviour, were apparently serving behind a counter or leaning in front of a bar before the war. Some men of this sort have been appointed to inspect aircraft under construction though they have never seen an aeroplane, except perhaps with a "hedge-ticket" when some aerial acrobat has been performing. Many of them have not even had an engineering training. Yet they are entitled to the same social standing as men who have had years of service and the best of technical education, and this, in spite of the fact that their ignorance simply delays output instead of increasing it.

On the other hand, one comes across case after case of sheer wasted ability. It is all very well to say that a good man will do a small job better than a bad man, and that in war-time many a "sahib" is bound to do a sweeper's work. That is an entirely false argument, for when there cannot be in any case enough top-hole men to go round for the best jobs—a fact which Germany has found out as well as us—it is sheer folly to waste them on subordinate positions and to put a lot of obvious "Tishbites" over them, especially when the latter happen to be grossly incompetent.

Personally I should not mind holding a subordinate position as an inspector of component parts, or as a foreman, in a factory under a trained and capable engineer who could hardly write his name, but could run a workshop properly, but I know I should murder someone if I were given a warrant-officer's job, or a petty officer's, and found that my immediate superior officer had been my haberdasher's chief assistant who had managed to get a commission because the chief of the examining board liked the way he tied his tie, or thought that officers should have clean hands, no

matter how dirty their characters might be. Yet some of the people who have been appointed as commissioned officers cannot well have been selected on any better grounds.

All some of them are able to do is to hang up deliveries because they think it smart to refuse to pass something or other without knowing why. Others waste their time and the still more valuable time of foremen or works managers by taking them out to buy wholly unnecessary drinks and fool with barmaids when they ought to be working. How and why and by whom they were appointed happily I do not know, or I might be rude to someone.

I do know, however, that I could quite easily walk round certain of our aircraft factories and three or four air stations and pick out twice as many men of whose social and technical value I know something personally and replace the present lot in a week with men who are at the same time fit to inspect aircraft and fit to wear the uniform of an officer without disgracing it either on or off duty.

#### How to Improve Matters.

Naturally aircraft manufacturers do not want to lose good men, but when the welfare of the Flying Services is at stake they should be prepared to make some sacrifices, and, anyhow, the Admiralty and War Office are surely in position to bring pressure to bear when necessary if it be found desirable—as it undoubtedly should be—to take men out of factories and appoint them inspectors of aircraft building.

It is even in the direct interests of the manufacturers themselves, for if a smart young draughtsman from A. & Co. is sent as an inspector to B. & Co. he is likely to learn something fresh and to be more valuable when he comes back after the war, or he may be so good that B. & Co. may choose to keep him in their own employ. And the same argument cuts the other way, so that A. & Co. may profit by having

ERNEST B. H. LANDER, 1915.

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an inspector sent to them from C. & Co. Such an interchange of experience is bound to raise the level of quality and constructional methods all round.

#### Educating Sub-Contractors.

Where new firms are taking up aeroplane making and are building as sub-contractors to the designs of other firms, it is doubly important that the inspectors sent to them should have had experience of the particular machines they are to build. For example, if Messrs. Hodge and Sons, makers of dairy machinery, are to start building Shopro biplanes, surely it is to the advantage of everybody that the inspectors should come from the Shopro works.

Hodge and Sons have never seen an aeroplane. Therefore they hardly begin to know how to set to work. They have to be instructed as well as inspected. The sooner their first machine is out, and the more they build afterwards, the better. They will make more profit. The Shopro firm will make more in royalties on their designs. And the Services will have more machines to fly—which is most important of all. Who can instruct and inspect so well as men from the Shopro works? It is no good appointing an adventurer who has been compelled to bolt from half the countries in the world and whose knowledge of bolts is confined to that experience. An ex-naval engineer, who retired by request after acquiring a large capacity for alcohol, is still worse. An entirely virtuous draper's assistant is no better.

Why not, therefore, go to the Shopro people and simply point out that so many really good men are needed as inspectors to increase the output of their machines? Their third best men, charge-hands, draughtsmen, and even fitters, would be quite good enough for the work, and would be far better than most of the inspectors appointed recently. And the Shopro people could replace them by men from ordinary engineering shops, who could be fairly quickly trained in the firm's own works though they would be of little use as inspectors if simply turned loose in a strange shop, on a strange job, with a set of strange blue prints.

The borrowed inspectors need not necessarily have clean hands, nor need they be suitable socially for commissioned rank, and they may be made only warrant-officers or petty officers R.N.V.R., but they would be none the less effective. After all, the R.N.V.R. is not a home for decayed gentlemen, nor a refuge for nature's failures, nor need it be regarded as a last resort for that peculiar grade of person who is not a gentleman and knows it, but is too conceited

to take non-commissioned rank, even if fit for that.

There are many first-class men holding R.N.V.R. commissions. Men who are the equals mentally and socially of the best officers in the Navy proper, and it is an insult to them that their Service should be loaded up with anyone who is not good enough for the *pukka* thing. In this matter we might well learn another lesson from Germany, whose "ersatz-offizier," and "offizier-feldwebel," in the Army, and other equally curious ranks in the Navy, seem to give an officer's authority for the time being without an officer's position.

Meantime our output of aeroplanes would be distinctly increased by clearing out some of the people who have been given R.N.V.R. commissions and putting them on to swab out aeroplane sheds, or to polish brass-work at the Admiralty. Men who never show up to start inspecting till mid-day. Men who go out for various drinks during the day and finish up about 6 p.m. to end the day quietly blind in their own quarters. Men who are known to some of us as utterly incompetent and grossly idle. These might well be cleared out and replaced by men who are fit for their work and fit for their positions.

#### Apart from the Technical.

This, of course, does not apply to the Army's technical department, for the A.I.D. inspectors hold no rank, and are just inspectors—also they average pretty high in intelligence and in good behaviour. And it is a great pity that it should apply to the Navy's inspection department, in which there are many good and capable men, but when one hears the jibe that Admiralty inspection means "walking casually round a completed aeroplane while lightly tapping the leg with a clouded cane," it is time something was said and something was done.

So far as flying officers are concerned both Services seem much in the same boat. Just what has happened in the matter is hard to discover, but there was a time when it was as easy for a rich man to enter the Kingdom of Heaven as into either of the Flying Services without special qualifications. Manner—not manners—was as important as physique, or age, or education. Now commissions seem to be given without rhyme or reason. Good men are refused, obvious rotters are accepted. Officers on service wonder whence on earth the latest-joined members of their mess were extruded. The only conclusion one can reach is that all the original selection officers of the real Service type are on active service and that the new officers are being appointed by the business men on either side of Whitehall.—C. G. G.

#### Real Tit-Bits.

A correspondent sends a cutting from a paper called "Tit-Bits," which gives some entertaining tit-bits on "The Duty of Air Mechanics." It is not clear whether the said mechanics have been pulling the author's leg, or whether it is merely that the author has been pulling the editor's leg. The result is the same anyhow:—

"At dawn the air mechanic must be at work, for the still, clear morning air is ideal for reconnaissance flights. He tests every important wire and strut in the machine before the military pilot climbs into his seat, and it is for him to say whether he considers the aeroplane fit to fly or not. Before breakfast the mechanic has to cast his experienced eye over a score or more aeroplanes, and if he misses a cracked strut or broken wire he may cause a pilot to take aloft a dangerous machine which will probably cost the aviator his life. . . . In emergencies a handkerchief is used to cover tears in the wing fabric, and temporary struts are roughly cut out of fence poles or any wood available.

"In the course of his duties the air mechanic has to make many flights as a passenger. When new machines are being tested in boisterous weather the mechanic has to act as ballast, as in windy weather an aeroplane behaves better if it is weighted to keep the tail plane down

[The last "tit-bit" about ballast is a jewel of the Orient, especially when one remembers that in nearly all machines the passenger sits in front.—Ed.]

#### A Matter of Nerve.

The following from the Calgary "Daily Herald" is worth putting on record:—

The story is told of a young Frenchwoman who observed with punctilious care the precautions ordered by the police.

She kept the shutters closed at nightfall and the curtains pulled down. But one night she reached the limit.

The newspapers said that if the Zeppelins came all persons must go into the cellars. She told her friends she would not go down into the cellar.

"I do not care a fig for the Zeppelins," she said. "It is no use asking me. I will not go down into the cellar."

"But why?" asked her friends. "Because," she replied, "I am afraid of spiders."

#### The Real Destroyer.

The following note appeared in the "Morning Post":—

Sir,—In Proverbs xviii. 9 occur these words:

He also that is slack in his work, Is brother to him that is a "destroyer."

Are they not strangely applicable to the present situation?—Yours, etc.,

44, Eaton Terrace, May 6th.

GEORGINA E. GAGE.

[Judging by some of the scrap work one sees, the producer of it seems to be the "destroyer" himself. And the Trade Unions call a strike if the "destroyer" is discharged.—Ed.]

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I am, Yours faithfully,

(Signed) CECIL M. HILL.

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## Naval and Military Aeronautics.

### GREAT BRITAIN.

From the "London Gazette," June 1st, 1915.

ADMIRALTY, MAY 28TH.

ROYAL NAVAL AIR SERVICE.—Granted temp. comm. as flight lieut.: F. W. Merriam. May 27th.

\* \* \*

WAR OFFICE, JUNE 1ST.

REGULAR FORCES.—ESTABLISHMENTS.—Warrant and N.C.O.'s to be sec. lieuts., for service in Field:—

INFANTRY.—ROYAL IRISH.—Cpl. L. Murphy, from Royal Flying Corps. May 12th.

ATTD. TO HEADQ. UNITS.—Chief Engineer—Col. (temp. Brig.-Gen.) J. E. Capper, C.B., and retain temp. rank. May 9th.

ROYAL FLYING CORPS.—MILITARY WING.—Flight Coms.—Lieut. L. Da C. Penn-Gaskell, Norfolk, from flying officer, and to be temp. capt. April 27th. Lieut. D. E. Stodart, S.R., from flying officer, and to be temp. capt. May 6th. Lieut. (temp. Capt.) L. S. Metford, S.R., from eqt. officer, and to retain temp. rank. May 12th. Lieut. J. A. Cunningham, R.A., from flying officer, and to be temp. capt. May 16th.

Flying Officers.—Sec. Lieut. E. L. Gossage, R.A., and seconded. May 12th. May 14th: Sec. Lieut. H. B. R. Grey-Edwards, R.A., and seconded; Sec. Lieut. J. R. McCrindle, 7th Gordon H., T.F.; Sec. Lieut. G. Merton, S.R.

Eqpmt. Officer.—Sec. Lieut. N. Goldsmith, R.A., from asst. eqpmt. officer, and to be temp. capt. May 17th.

CAVALRY.—8TH RES. REGT.—Temp. Sec. Lieut. E. F. Beaumont relinq. commn. on appt. to Royal Naval Air Service. June 2nd.

\* \* \*

From the "London Gazette," June 2nd, 1915.

WAR OFFICE, JUNE 2ND.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Temp. Lieut. L. T. G. Mansell, from Gen. List, to be Lieut., and to retain his appt. as temp. Asst. Inspector, Aeronautical Inspection Dept. June 3rd.

In a supplement to the "Gazette" appeared a list of warrant officers, non-commissioned officers, and men, to whom his Majesty the King has been graciously pleased to approve the award of the Distinguished Conduct Medal for acts of gallantry and devotion to duty. Among them, the following appear: 2763 Second Class Air Mechanic H. D. Beet, Royal Flying Corps.

2152 Second Class Air Mechanic H. Dewhurst, Royal Flying Corps.

2761 Second Class Air Mechanic J. H. Dollittle, Royal Flying Corps.

354 Cpl. S. C. Griggs, Royal Flying Corps.

2008 Second Class Air Mechanic J. E. Prance, Royal Flying Corps.

To each of these names is appended the following note:—

For gallant conduct and valuable service on the night of March 10-11, 1915, in assisting to repair one of our aeroplanes which had been forced to descend near the firing line whilst being heavily shelled by the enemy. The machine was enabled to fly away by the following morning.

\* \* \*

From the "London Gazette," June 4th, 1915.

ADMIRALTY, MAY 31ST.

ROYAL NAVAL AIR SERVICE.—Flight Comdrs. promoted to rank of Sqdn. Comdr.:—T. G. Hetherington, de C. W. P. Ireland, J. T. Babington, D.S.O., F. E. T. Hewlett, A. W. Bigsworth, A. C. Barnby, H. Fawcett, R. P. Ross. May 27th.

\* \* \*

WAR OFFICE, JUNE 4TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—The following appt. is made:—Flying Officer—Temp. Sec. Lieut. H. B. R. Grey-Edwards, R.A. (May 14th) (substituted for notification in "Gazette" of June 1st).

From the "London Gazette," June 5th, 1915.

WAR OFFICE, JUNE 5TH.

ROYAL FLYING CORPS.—MILITARY WING.—Asst. Eqpmt. Officer.—Sec. Lieut. L. M. Bennett, S.R. May 5th.

\* \* \*

From the "London Gazette," June 7th, 1915.

WAR OFFICE, JUNE 7TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Temp. appt. of Capt. (temp. Maj.) S. D. Massy, 29th Punjabis, I.A., as a sqdn. com. antedated to March 24th.

Flight coms. to be sqdn. coms., and to be temp. maj. whilst so employed: Capt. P. B. Joubert de la Ferté, R.A. May 25th. Capt. H. T. Lumsden, Cameron H. May 27th.

Flight coms.—Lieut. (temp. Capt.) C. S. Burnett, R. of O., from wing adjt., and retain temp. rank whilst so employed. May 24th. From flying officers.—May 25th: Lieut. V. H. N. Wadhain, Hants, and to be temp. capt. whilst so employed; Capt. R. M. Rodwell, W. Yorks; Lieut. T. W. Mulcahy-Morgan, R. Irish F., and to be temp. capt. whilst so employed; Lieut. W. C. K. Birch, Yorks, and to be temp. capt. whilst so employed; Lieut. G. J. Malcolm, R.A., and to be temp. capt. whilst so employed; Capt. E. F. Unwin, A.S.C.; Capt. J. L. Jackson, 3rd Conn. Rang.

Flying officers.—May 25th: Temp. Lieut. F. J. Powell, 18th (3rd City) Manch., and transf. to gen. list; Sec. Lieut. S. W. Caws, S.R.; Sec. Lieut. C. F. Collett, S.R.

Flight com. (without pay or allowances).—Capt. (temp. Maj.) H. F. Wood, 9th Lrs., S.R. May 26th.

### NAVAL.

The following appointments were notified at the Admiralty on June 1st:—

ROYAL NAVAL AIR SERVICE.—The following flight commanders have been promoted to the rank of squadron commanders, all with seniority May 27th: T. G. Hetherington, De Courcy W. P. Ireland, J. T. Babington, D.S.O., F. E. T. Hewlett, A. W. Bigsworth, A. C. Barnby, H. Fawcett, and R. P. Ross.

C. R. J. Randell's seniority as squadron commander post-dated to July 1st, 1914. (Query—Ante-dated?)

Flight Sub-Lieut. F. J. Rutland granted the acting rank of flight lieutenant, to date May 30th.

Mr. C. F. Brandon-Penley entered as probationary flight sub-lieutenant for temporary service, and appointed to the "President," additional, for R.N.A.S., to date June 7th.

The following appointments were notified at the Admiralty on June 4th:—

ROYAL NAVAL AIR SERVICE.—Flight Sub-Lieut.—F. W. Gamwell granted the acting rank of Flight Lieutenant, with seniority of June 3rd, and reappointed to the "President," additional, for R.N.A.S.

The following entries have been made:—L. G. Sieveking, as Probationary Flight Sub-Lieutenant, with seniority of June 7th; W. A. Briston, as Lieutenant (R.N.V.R.), with seniority of May 28th; Lord Clifton and R. C. Eller, both as Lieutenants (R.N.V.R.), with seniority of June 3rd; and C. Horsfield, as Sub-Lieutenant (R.N.V.R.), with seniority of June 3rd, and all appointed to the "President," additional, for R.N.A.S.

\* \* \*

The following appointments were notified at the Admiralty on June 5th:—

ROYAL NAVAL AIR SERVICE.—The undermentioned granted temp. commissions as sub-lieuts., R.N.V.R., and appointed to the "President," additional, to date June 3rd; W. T. Franks, C.B., G. E. Mills, J. J. Meakin, and T. Wontner-Smith.

The following have been granted temp. commissions as sub-lieuts., R.N.V.R., and appointed to the "President," additional, for duty with R.N.A.S., to date June 3rd: E. J. MacGillivray, J. P. Elsdon, E. J. Edward, also Sec. Lieut. E. F. Beaumont.

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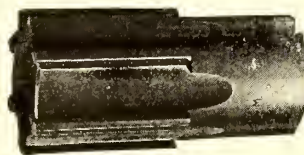
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The Secretary of the Admiralty announced the following casualties on June 2nd:—

ROYAL NAVAL AIR SERVICE, JUNE 1ST.

KILLED.

Flt. Lieut. Douglas M. Barnes.

SLIGHTLY INJURED.

Flt. Sub-Lieut. Benjamin Travers.

\* \* \*

Flt. Lieut. Douglas Meston Barnes was killed when landing in the dark in the neighbourhood of Hatfield, presumably being brought down by engine failure. He was born in London and took his certificate (No. 1005) at the Grahame-White School at Hendon on December 20th, 1914.

Though so young as a flier he was already second in command at Hendon, and had won the respect and regard of officers and men alike. He was a reliable and thoughtful pilot and will be greatly missed by all at Hendon and Chingford.

\* \* \*

Flt. Sub-Lieut. B. Travers was injured while alighting in a small, fast waterplane on the North Sea. Apparently the chassis or floats crumpled up and the machine more or less disintegrated. The pilot suffered no serious injury, but it is said that the amount of superficial damage, due to cuts and abrasions from splinters, was very great.

\* \* \*

The Secretary of the Admiralty announced the following casualties on June 7th:—

EXPEDITIONARY FORCE.

WOUNDED.—Surg. Dudley D. Pinnock, R.N., Armoured Car Division (June 3rd).

MEDITERRANEAN EXPEDITION.

KILLED.—Sub-Lieut. John Weightman, R.N.V.R., Armoured Car Div. (June 4th).

WOUNDED.—Lieut. Norman E. Holden, R.N.V.R., Armoured Car Division (June 4th).

Lieut. Theodore D. Hallam, R.N.V.R., Armoured Car Div. (June 4th).

SLIGHTLY WOUNDED.—Lieut. Wilfred A. Daniell, R.N.V.R., Armoured Car Div. (June 4th).

\* \* \*

The following was communicated by the Press Bureau at 3 p.m. on June 7th:—

The Secretary of the Admiralty states that this morning, at 2.30 a.m., an attack was made on the airship shed at Evere, north of Brussels, by Flight Lieuts. J. P. Wilson, R.N., and J. S. Mills, R.N.

Bombs were dropped on the shed, which was observed to be in flames.

It is not known whether a Zeppelin was inside, but the flames reached a great height, coming out from both sides of the shed.

Both pilots returned safely.

At 3 a.m. Flight Sub-Lieut. R. A. J. Warneford, R.N., attacked a Zeppelin in the air between Ghent and Brussels at 6,000 feet.

He dropped six bombs, and the airship exploded, fell to the ground, and burnt for a considerable time.

The force of the explosion caused the Morane monoplane to turn upside down.

The pilot succeeded in righting the machine, and had to make a forced landing in the enemy's country.

However, he was able to restart his engine, and returned safely to the aerodrome.

\* \* \*

The above gives distinct encouragement to the belief that two Zeppelins have been effectively dealt with—or "spike-bozzled," which is, one gathers, the correct R.N.A.S. vernacular for complete demolition. An airship shed does not belch forth flames from its sides unless there is more inside it than itself, and the assumption is that an airship of some sort was there. Probably these were our two latest raiders.

The second half of the message deals with an episode which marks an epoch in aviation, for it is the first time an aero-

plane has destroyed an airship in the air, whereas Flight Commander Marix, and probably Lieut. Hawker, R.F.C., had both destroyed airships in their sheds.

However, the flying shot is always considered the more sporting effort, and the young officer concerned is to be highly congratulated on his success, and he is to be further congratulated on his extraordinary luck in escaping capture when he landed in German territory. It seems that he may thank German "frightfulness," for the system of terrorising a district so that one fat Landsturmer can "hold down" a parish, results in a scarcity of troops to catch flying visitors of this sort before they can get away again.

Of the officers concerned Flt. Lieut. J. P. Wilson is an old Vickers pupil who took his certificate (No. 810) on June 8th, 1914, just a year before he distinguished himself. He is a Yorkshireman, born at Malton on April 3rd, 1889. Flt. Lieut. J. S. Mills is of the 1915 "vintage," having taken his certificate (No. 1049) on a Grahame-White biplane at Hendon on January 26th this year. He is a Devon man, born at Newton Abbott on August 9th, 1888. Both are sound, reliable pilots.

Flt. Sub-Lieut. R. A. J. Warneford is an Anglo-Indian, born in Cooch-Behar on October 15th, 1892. He took his certificate (No. 1098) at the R.N. Air Station at Hendon on February 25th of this year, so he is a very young pilot indeed for so big a feat. He has the reputation of being a very clever flier and rather too daring. It is told of him that he went recently to destroy a Zeppelin in her home, but finding the shed empty he dropped his bombs on the men's quarters at the aerodrome, with the result that they picked up of the remains twelve motor-ambulances full. Also there is a tale of his flying a new machine from Paris late in the evening and following a compass course over the German lines merely to save time. Such pilots frequently survive out of sheer luck. In any event he goes down to history as the first pilot to destroy a Zeppelin in the air.

A message from Amsterdam on Monday said that travellers from Ghent gave details of the wrecking of a Zeppelin at 3.20 that morning at Mont St. Amand, near Ghent. The Zeppelin took fire and fell upon a convent, unfortunately killing two nuns in its descent. The entire crew were killed.

\* \* \*

The Secretary of the Admiralty made the following announcement on June 8th:—

H.M. the King has sent the following telegram to Flight Sub-Lieutenant Warneford:—

"I most heartily congratulate you upon your splendid achievement of yesterday in which you, single-handed, destroyed an enemy Zeppelin.

"I have much pleasure in conferring upon you the Victoria Cross for this gallant act.—GEORGE R.I."

MILITARY.

The following appeared in the Casualty List published on June 3rd:—

PREVIOUSLY OFFICIALLY REPORTED MISSING, NOW UNOFFICIALLY REPORTED PRISONER.—Eberli, Lieut. F. H., Royal Garrison Artillery, attd. Royal Flying Corps.

\* \* \*

The following appeared in the Casualty List published on June 4th, and reported from Headquarters under date of May 28th:—

PREVIOUSLY OFFICIALLY REPORTED MISSING, NOW UNOFFICIALLY REPORTED PRISONER.—Gladstone, Sec. Lieut. C. A., Gen. List., attd. Royal Flying Corps.

\* \* \*

The following appeared in the Casualty List published on June 7th under date May 30th:—

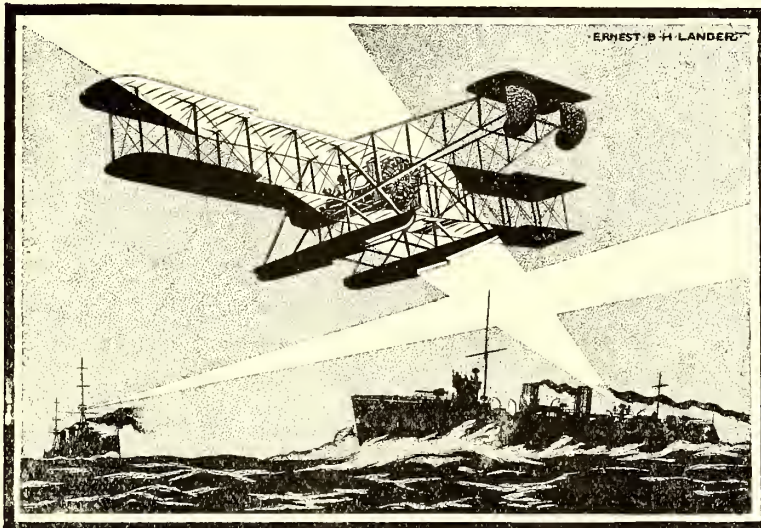
WOUNDED.—Tyssen, Capt. J. H. S., N. Somerset Yeomanry, attd. Royal Flying Corps.

\* \* \*

A marriage has been arranged, and will shortly take place, between Major Clive Mellor, Royal Engineers and Royal Flying Corps, and Eileen, youngest daughter of the late James Macfarlane, of Auckland, New Zealand.

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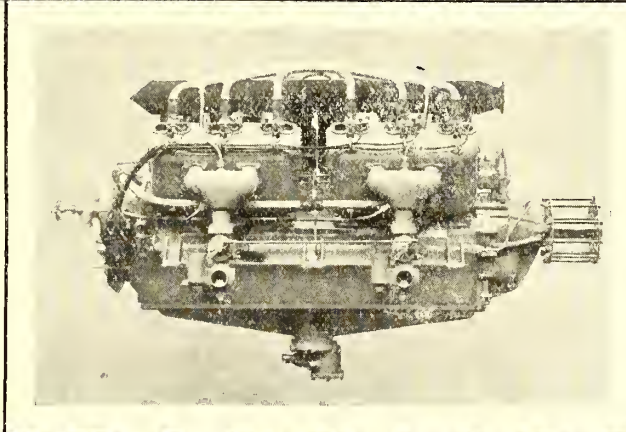
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The following appeared in the wedding announcements of June 8th:—

**FREEMAN-MEWS.**—On 5th June, at St. James's Church, Paddington, by the Rev. Percy D. Scott, very quietly, Captain Wilfrid Rhodes Freeman, of the Manchester Regiment and the Royal Flying Corps, third son of William R. Freeman, of 103, Westbourne-terrace, and Murtle Den, Aberdeenshire, to Gladys, third daughter of John Mews, of 90, Westbourne-terrace, and Goldsmith-building, Temple.

Captain Freeman was recently awarded the Military Cross for a particularly gallant action at Neuve Chapelle.

#### FRANCE.

The communiqué of June 3rd says:—

Twenty-nine French aviators between 4 and 5 a.m. bombarded the Headquarters of the Imperial Crown Prince. They dropped 178 bombs, many of which struck their objective, and also several thousand darts. All the aircraft were heavily shelled, but all returned safely.

A report from Paris states that a Taube flew over Calais at noon on Saturday, June 5th, and dropped several bombs. One person was killed.

As a measure of protection against the asphyxiating bombs which Zeppelins may drop on Paris all the policemen are to receive masks similar to those issued to the Army.

The following "citation" appeared in Army Orders for June 4th:—

"Noël, Louis—Pilote d'exceptionnelle valeur et d'audace presque téméraire, n'hésite pas à survoler les lignes ennemis à faible altitude pour accomplir sa mission et montre sous le feu de l'artillerie ennemi un imperturbable sangfroid qui fait l'admiration des observateurs et en a plusieurs reprises son appareil atteint par des balles ou des éclats d'obus, notamment le 29 avril dernier. A exécuté plusieurs vols de nuit."

#### GERMANY.

The communiqué of June 1st says:—

In reply to the dropping of bombs on the open town of Ludwigshafen, we tonight dropped many bombs on the wharves and docks of London.

Enemy aviators last night bombarded Ostend, damaging some houses without causing any other material loss.

The communiqué of June 3rd says:—

In the Vosges our airmen bombarded the communication centre and railway junction of Remiremont and an enemy military camp near Hohneck (in Alsace).

The communiqué of June 5th says:—

We dropped bombs on the aerodrome at Dummartemont, near Nancy.

The communiqué of June 6th says:—

We dropped bombs on Calais and on the aerial station of St. Clémence near Lunéville yesterday.

A report from Berlin via Amsterdam on June 4th states that the aerial attack on the Crown Prince's Headquarters killed several men, but otherwise the attack was unsuccessful.

[That is to say it unfortunately missed the Crown Prince himself.—Ed.]

#### AUSTRIA.

The following official statement was issued in Vienna on June 2nd:—

The result of the bombardment of Pola by an Italian airship, as reported in the communiqué issued by the Staff of the Italian Admiralty, is incorrect. Four bombs exploded, but the damage done was very slight, and no fire broke out.

In the bombardment of Monfalcone one civilian was slightly injured by splinters from a stone.

A message from Cetinje on May 29th says that the same morning in the neighbourhood of Dulcigno two Italian torpedo-boats fired at an Austrian seaplane, which came down to sea level and then flew towards the direction of Cattaro.

It is reported from Rome that considerable damage was done to the Arsenal at Pola by the Italian airship which threw bombs on it on May 31st.

#### ITALY.

An official communiqué issued in Rome on June 1st says:—

An enemy aeroplane appeared this morning over Bari and another over Brindisi. Bombs were dropped on both towns.

At Bari one of the bombs exploded on the roof of a private house and a child of fifteen was struck by a falling tile, and afterwards died of his injuries. Two townspeople were slightly injured in Brindisi, and two private houses were very slightly damaged.

A Rome message to the "Matin" states that on June 6th an Italian cruiser found a seaplane on the water off Brindisi. It was of German make, and bore the mark L 32. Documents on board suggested (it is not explained how) that the aviators had



NCOs. and Men of the R.F.C. at present stationed in the Midlands.

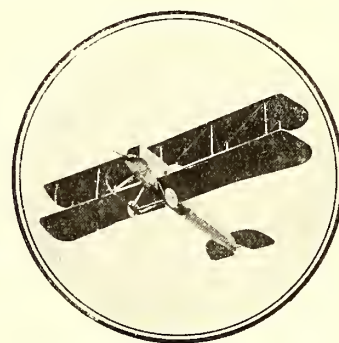




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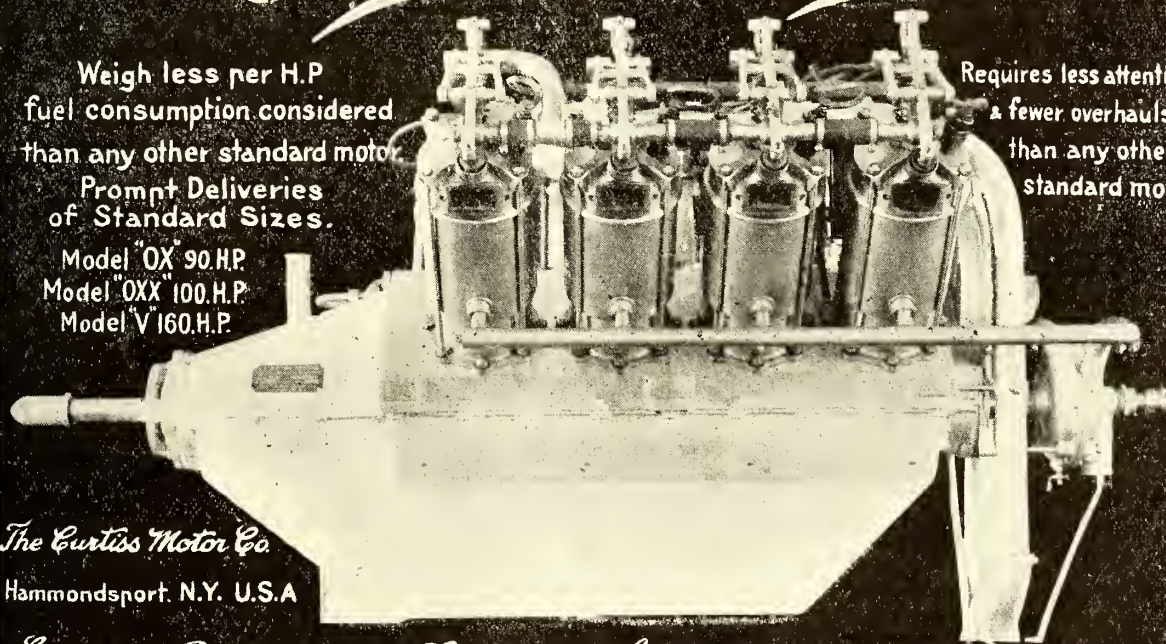
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been drowned. The machine was only slightly damaged, and it is believed to have been the same one which bombarded Brindisi the previous day.

According to the Paris "Journal des Debats," as reported by Reuter, an eye-witness of the aerial bombardment of Venice on May 24th says that an Austrian aviator flying nearly 10,000 feet above the town at 3.30 a.m. released an enormous parachute to which was suspended incandescent matter lighting up the ground beneath. A flotilla of Austrian aeroplanes, also flying at a great height, then dropped bombs, killing three or four civilians.

[The idea of illuminating ground by lights from a parachute was suggested in *THE AEROPLANE* many months ago. "Incandescent matter" is a typical "Reuterism." It is more likely that some brilliantly candescent substance, such as magnesium, was used. To the average journalist "incandescent" means something giving a bright light, like a gas mantle, instead of simply meaning "non-burning," as it does, in fact.—Ed.]

The authorities at Ancona state that the damage caused on May 24th at the iron bridge across the Mare Cohn, near Rimini, was due not to enemy ships, but to an Austrian dirigible, which bore, clearly legible, the name "Ferrara," and carried an Italian flag.

#### RUSSIA.

The communiqué of June 6th says:—

On the Vistula a Russian aviator successfully bombarded a string of enemy boats, and sank one of them.

It was reported from Warsaw on June 1st that a bomb thrown from a German aeroplane at Girardor struck a cinema theatre full of people. It pierced roof and ceiling and burst in the hall, killing 6 persons and wounding 25, mostly women and children.

A "Reuter Special" at Petrograd sends the following "story," which is probably a revised version of one published some time ago:—

"One of the most daring Russian aviators on the Galician front is a girl from a Petrograd high school. She recently arrived at Kieff wounded in the arm and leg, having been hit while flying over some Austrian positions. She, however, kept control of her machine until she landed safely in the Russian lines."

#### BELGIUM.

A report from Rome states that the news of Italy's entry into the war was announced to Belgium by aviators, who scattered thousands of slips of paper with the statement that Italy has declared war against Austria.

The "Morning Post" correspondent at Amsterdam reported on June 1st that early on that day Allied aviators raided Ostend and caused consternation amongst the German garrison. Some houses caught fire, and were partly destroyed. The German coast batteries were also attacked. The Germans fired on the aviators without effect.

The Amsterdam "Telegraaf" learns from Bruges that, during the night of May 31st and June 1st, four Allied aviators again visited Ostend. About 2 a.m. heavy gun-firing, accompanied by loud explosions of bombs, apparently aimed at the electrical works and the harbour station, was heard. The extent of the damage done is unknown. The following night the aviators repeated their visit along the coast.

#### HOLLAND.

It was reported from Amsterdam on June 5th that a biplane descended on that day near Axel, in the Province of Zeeland. Two officers who were in it were interned.

#### SWITZERLAND.

It was reported from Berne on June 6th that a French aeroplane which descended in Swiss territory two months ago and was interned has now been presented by the French Government to Switzerland "as a slight token of true gratitude for all the kindnesses which Switzerland has constantly shown to our subjects, civilian and military, repatriated through your territory."

[Are we now expected to present to Holland the nucleus of an airfleet which has descended there? The Dutch have certainly been kind to our people, so we might well do worse.—Ed.]

It was reported from Berne on June 4th that Lieut. Moritz Vollenweider and Corporal Peter Probst, of the Swiss Army, when returning from Berne to Dübendorf, were killed. The scene of the accident was about half an hour's flight from Dübendorf.

#### SAN MARINO.

The Republic of San Marino which, although entirely surrounded by Italy, is an independent State, is discussing its attitude towards, i.e., the war—whether it should remain neutral or declare war on Austria, Germany, and Turkey. San Marino stands on a mountain near Rimini, and dominates the Adriatic. If it were neutral, Austrian aeroplanes could take refuge there. If it were at war it could be used as an anti-aircraft position.

The Republic is the oldest State in Italy, and has an area of 38 square miles and a population of about 12,000. Mount Titano (2,200 ft.), on which the capital is built, has a wireless station which, in January last, was the subject of a protest by Germany, Berlin asserting that French warships in the Adriatic had utilised it to send news to Paris. A treaty of friendship with Italy was concluded in 1909.

#### TURKEY.

A special correspondent of the "Daily Telegraph" writing from Gallipoli on May 23rd says:—"The daily excitement of the land operations is a duel between an English captive balloon and Turkish aeroplanes. The balloon, which directs the gun-fire, is viewed with alarm and chagrin by the Turks. Not only do they aim every available gun at it, but immediately it appears an aviator is launched against the yellow spheroid. When this danger threatens the balloon returns to earth."

#### PALESTINE.

It is reported from Athens by Reuter's Agency that "An Allied seaplane has been sighted over Nazareth."

One is left in doubt as to whether this indicates the beginning of a Zionist movement on the part of the Semitic section of the Royal Naval Air Service, or whether it was merely a sporting effort on the part of a single pilot desirous of taking a bird's-eye view of the home of his ancestors. If it had been Zorah, or even Gaza, one might have found a clue to the identity of the pilot, though perhaps the sect of the Nazirites may have some connection with the town of Nazareth (vide Judges, Chap. 13).

#### U.S.A.

On May 8th Ensign M. L. Stolz of the Navy Aviation Corps was killed while flying at Pensacola, Florida. It is reported that the machine dived vertically from a small altitude and that the pilot fractured his skull. Ensign Stolz was born on July 29th, 1888, and was appointed to the Naval Academy from New York in 1906. He did some scouting at Vera Cruz during the American occupation.

It has been announced that the Secretary of the Navy is about to place an order for three seaplanes with the Burgess Company, of Marblehead, Mass., at a contract price of 11,500 dollars each. Bids had been asked for the furnishing of three or six machines, the award to be based on the completeness of the proposals, and the extent to which the designs conformed to or exceeded the requirements, and owing to the character of the bids it was decided to contract for only three machines at this time. This is the first contract placed since Congress appropriated 1,000 dollars for aviation.

Some extraordinary statements about British progress in aviation since the war began appear in an interview with a person called Professor R. A. Fessenden, an alleged American electrical expert, in the Boston "Globe."

Professor Fessenden, who says that he has been assisting the British authorities, stated that through the careful studies and calculations of the American professors, Bush and Bryan [Does he mean Busk and Bryan? Mr. Busk was not a "professor" and neither are, or were, Americans.—Ed.] the British War Department has been able to build the safest and



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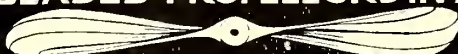
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speediest biplane in the world. In fact, they are trying to make it a little less stable than it is, for the stability is so great at present that it is rather difficult to make quick turns and sudden stops or climbs. They are trying to reduce the stability and increase the flexibility of the machine.

\* \* \*

This amusing person continues:—

"The great stability of the machine is not due to any gyroscopic arrangement. It is all worked out in the wing curves and in relation to the planes, and especially of the tail planes, for this machine is built with tail planes something like the old Farman biplane. This machine was built by the Government on lines laid down by Bush and Bryan, and it is operated by a Gnome engine. [He must have some dim knowledge of the S.E. and be mixing it with the B.E.2c.—Ed.]

"When war broke out they had about fifteen of these biplanes [Which they had not.—Ed.], and I think they must have at least 100 of them now, and they are turning them out all the time.

"The new biplane can fly twice as fast as the German Taube, and can climb twice as fast. It flies easily 125 miles an hour, carries two men and considerable other weight, and it is so stable that the aviator can set the levers and take his hand from them whenever he pleases. He can set a course and hold it. [Especially in a side wind, what? A decent Taube does 65, but one has yet to see a B.E.2c do 125, even when "faked" to the limit.—Ed.]

This scientific humorist goes on:—

"I did some work on a device the British Government has by means of which a dirigible can be detected and located at a distance of ten miles. I am not at liberty to say just what that device is

The "professor's" view about the end of the war is "that somebody is going to be starved into submission. Modern artillery and flying machines have stalled the armies. In the naval part of the war the submarine is the danger. But the British were perfecting mine sweepers and trawlers when I was over there that operate down 60 or more feet, and they are putting new mine sweeping devices on the battleships that looked as if they might be effective. I think they've been using some of these new wire mine sweepers in the Dardanelles.

[Apparently some of these Americans know too much. But either they are accomplished leg pullers or have had their legs badly pulled.—Ed.]

\* \* \*

Mr. Gordon Bruce, the author of the article on the notorious "Captain" Janney which appeared in the "New York Tribune," writes the following very sportsmanlike letter:—

"Dear Sir,—In your issue of April 21st you took occasion to refer to an article written by me, quoting a man who represented himself to be Captain E. L. Janney, of the Royal Flying Corps. The editorial comments accompanying your reprint of certain extracts could hardly be construed as complimentary to me. That, as well as the fact that several other reputable New York papers printed similar stories without drawing criticism from you, can be passed over. However, perhaps I can answer your question, 'Who is this Gordon Bruce who drags in the name of the Aero Club of America and of a reputable New York paper like the "Tribune," etc.?' Also, it may be well to vouchsafe a few words of explanation as to the circumstances under which the story was written.

"I am the aeronautical writer of the 'Tribune.' As to my qualifications for the job you may consult any of the following gentlemen: Orville Wright, Glenn H. Curtiss, Squadron Commander John Cyril Porte, Royal Flying Corps; Lyman J. Seely, manager Curtiss Aeroplane, now at the Savoy Hotel, London; Lieutenant-Commander J. H. Towers, U.S.N. Naval Attaché at the United States Embassy, London; Mr. Burns, formerly of the Austro-Daimler Motor Co., whom, I believe, you are acquainted with; Alan R. Hawley, President of the Aero Club of America; Captain Thomas S. Baldwin, New York; and Frank Hillier, of the London 'Daily Mail.' So much for that. [Commander Porte, R.N., is not R.F.C.—Ed.]

"As to the story to which you object—the man known as Captain Janney was introduced at the Aero Club of America by two responsible members. He was known to have purchased two aeroplanes and one motor, for which he paid cash. He was attired in what apparently was a British uniform,

which had the words 'Royal Flying Corps' worked on the collar. I am free to say that I was not well impressed with the personality of the man, and spoke of my feelings to several members of the Club on the day he visited there, but, on the face of it, everything appeared all right, and the story was too good to pass up lightly. Over here, we are not very familiar with your military regulations, and the wearing of a uniform signified nothing. It is a common sight to see foreign officers, in uniform, in New York.

"I can understand your viewpoint, nevertheless, and assure you that nobody is more loath to print anything that possibly could advertise a faker than I am. The history of aviation is too full of that sort of business already. If you will take the trouble to follow the 'Tribune,' I think you will find few instances where we are misled. A few days ago, I had luncheon with Orville Wright, and spoke to him of the matter. He recalled that the Wright representative, Griffith Brewer, had written him something of the alleged Captain Janney, about six months ago. If you will interview Mr. Brewer about it, perhaps some light will be thrown on the activities of the gentleman in question.

"It is a pity that there is so little communication between aeronautical writers in England and the United States. If there were more, doubtless fewer fakes would creep into the news. On my part, I should be glad to co-operate in any way to aid in stamping out questionable firms and individuals. In justice to me, I feel that you should publish my attitude as contained in this letter. You may use as much or little of it as you like. And I trust you will understand that I am for the legitimate and healthy extension of aeronautics and am anxious to do everything possible in the line of exposing frauds. (Signed) "GORDON BRUCE."

[The writer desires to thank Mr. Bruce for the attitude he has taken up on this subject, and assures the Press of the United States in general, and Mr. Bruce in particular, that he will always be happy to co-operate in any action which is for the good of aviation. The United States offers a vaster field for the development of aeronautics than does almost any other portion of the world, and it is to be hoped that the American aviation industry will be placed on such a sound footing by the orders it is now receiving from the Allies that when the war is over it may progress on thoroughly sound lines.—C. G. G.]

#### CANADA.

It is reported in the Canadian Press that a novel use of the aeroplane is under consideration by owners of sealing vessels, as a result of the failure of the seal hunt this year. It is proposed that two experienced aviators be engaged to visit the east coast and the gulf of St. Lawrence respectively, just before the opening next season, and locate the herds. The information thus obtained would enable the fleet to sail directly for the scene of the hunt, instead of spending much time in searching for the animals.

\* \* \*

From the "Brandon Weekly Sun," Toronto, Ont., May 6th: Vice-Admiral Kingsmill has accepted fourteen students for the Curtiss aviation school, which starts instruction this morning at the western sandbar of the island. Graduates will be given commissions with the British Aviation Corps.

[One gathers that this school is officially recognised and is in charge of Mr. J. A. D. MacCurdy. Apparently it has no connection with "Captain" Janney.—Ed.]

\* \* \*

A correspondent writes, regarding the number of aeroplanes in Canada, that there is one Curtiss pusher biplane somewhere around Vancouver, B.C., and an old Henry Farman box-kite pusher near Winnipeg, Manitoba. Mr. William H. Deans, of Toronto, Ontario, has a 1914 model Curtiss flying boat.

There is also a pusher hydro-aeroplane at Brockville, Ontario. Also a hydro-biplane owned and built by Messrs. Bead Bros. of Montreal, also a Blériot XI with 50-h.p. Gnome, owned by a French Canadian in the same city.

The only one of these in use to-day is Mr. Deans' Curtiss flying boat, which in the hands of Mr. Theo McCauley, the Curtiss Instructor, did a lot of flying on Lake Ontario, also two flights between Toronto and Hamilton.

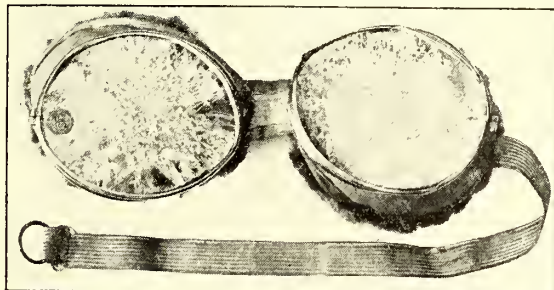
Mr. Deans has opened an aviation school in Toronto with

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Mr. James A. D. McCurdy as instructor. The latter, the correspondent says, "was formerly with the Curtiss Aeroplane Co. of Hammondsport, N.Y. He was also connected with Dr. Alexander Bell in his experiments in the early days of aeroplanes."

One is glad to see from the above that Mr. McCurdy is not connected with the swindler "Captain" Janney, as certain Canadian papers stated.

\* \* \*

The "Toronto World" has been reading about Capt. Janney in THE AEROPLANE, and as a result the following appears on the front page of the issue of Thursday, May 6th:—

What standing has Janney as flying teacher?

Does man who is conducting aviation school hold credentials?

AEROPLANE'S VIEWS.

Official magazine picks New York interview all to pieces. [Down to "pieces" all are headlines.]

What is the status of Capt. E. L. Janney of Galt, Ont., who is conducting an aviation school in Toronto?

Is Capt. Janney recognised by the Militia Department?

Does he hold a pilot's certificate?

Is Capt. Janney authorised to charge \$500 tuition fee to would-be airmen with the promise that after a nine months' course they will be refunded this amount along with \$125 bonus?

[These last four demands are in display print.]

Judged by his optimistic talk Capt. Janney appears to hold the key to the R.F.C., to be grasped by all pupils who wish to put up the sum of \$500. Capt. Janney came to Toronto more than two months ago from England and supposedly France. On reaching New York he gave an interview to a newspaper man, which was published in the "New York Tribune" and the "Toronto World," regarding the establishment of a flying school in Toronto. His statements have since been contradicted by THE AEROPLANE, a British periodical devoted to aeronautics. This publication states that Capt. Janney's views are slightly lopsided or words to that effect.

Capt. Janney is an aviation enthusiast. For some little time he conducted a motor garage in Galt, Ont. A few weeks after the outbreak of war he got into communication with the Minister of Militia when the first Canadian Division was being mobilised at Valcartier, offering his services as an aviator. At that time he was in New Bedford, Mass. He told General Hughes that he would fly to the camp. At Sorel his machine broke down and he was arrested. The authorities in that town had probably never before seen an aeroplane, and at that time the country was practically in a state of war. About two days before the boats left Quebec the aviator arrived accompanied by another airman named Webster. It has been said that Webster handled the machine and that Capt. Janney was merely a passenger.

Capt. Janney was attached to the Headquarters staff and went to England on the steamer "Franconia" one of the convoys. When the contingent arrived on Salisbury Plain the officer was still attached to headquarters. He, according to himself, was to be in command of the Canadian Flying Corps which was about to be established. Lieut. W. F. Sharpe of Ottawa, who was killed a few weeks later while trying out a new machine at Shoreham Camp, and Lieut. Farr, a mechanic, were also to be in the flying corps.

For several weeks it was understood that Capt. Janney was negotiating with Ottawa with the intention of establishing a full flying corps, but, according to the Commander of the Department of Militia, balked at handing over \$120,000 which would have been the expense entailed. When Ottawa refused to lay aside this amount it was generally thought that the two Canadian aviators and the mechanic would become attached to the R.F.C. Lieut. Sharpe, who was an enthusiast and had had some experience in California and other States, was killed. Lieut. Farr joined the R.F.C.

Capt. Janney returned to Canada. Why did he return? These are the facts: In the latter part of December or early in January Capt. Janney obtained leave for a few days. He said he was going to London and then France. He was away

from Salisbury several weeks, having overstayed his leave for some little time. He was next heard of at Shoreham Camp, where one of the big British Army flying schools is located. According to reliable information he was parading about as a staff-major—one step above his own rank—and wearing the accompanying red lapels and staff badge on his service cap. British officers, it seemed, could not quite swallow Janney's flamboyant utterances and sent an inquiry to the Canadian Headquarters. As a result Janney immediately returned to Salisbury. Very shortly after his name appeared in camp orders to the effect that he had been cut off the strength of the force.

Despite these facts Janney, who was not wanted in the Canadian Division, is now in Toronto making an attempt to conduct a flying school—no flights have been made as yet—and to teach would-be aviators at \$500 each. He obtained the use of property in N. Toronto, and it is also understood that he got some financial backing in order to establish his school.

The following article, which appeared in the British flying authority, THE AEROPLANE, in view of the above facts is interesting.

[Then follows the whole of the notes on Janney which appeared in this paper. It is to be hoped that Janney is now down and out.—Ed.]

\* \* \*

The following extract from the "Daily Colonist," Victoria, B.C. may be only an echo of Janney, but if not the Admiralty would do well to explain itself, for the arrangement seems unusual. No opportunity is offered in this country for "enlisted men" to receive \$375 dollars (£75) if they become pilots at their own expense.

The extract runs:—

"Ottawa, April 23rd. The Department of Naval Service has received over seventy-five applications in response to the appeal for Canadian recruits for the army flying service, Ottawa sharing with Toronto the honour of providing the largest number of would-be airmen. Mr. J. A. D. McCurdy, the expert who will supervise the training of the new men who are accepted, and who is authorised by the British Aero Club to grant pilots' certificates to recruits who show themselves qualified, has been in Ottawa for a couple of days.

"This training is being done at the expense of the recruits themselves, who, if accepted for service, will receive practically the whole cost of their training back as a grant from the British Admiralty. [Why should the Admiralty pay for men for the "army flying service?"—Ed. AEROPLANE.]

"All applicants will have to pass a medical examination by a board of examiners, and once he has passed the board he is an enlisted man, subject to discipline and under the control of the British Admiralty.

"The Canadian naval service department is acting as a recruiting agent for the British Government. Volunteers under 30 years of age are called for, and if accepted by the medical examiners are trained by the companies' teachers at a cost of \$400 each. This fee is paid by the pupil, but the money is refunded to the amount of \$375 by the British Government when he reports in England. When the pupil has been granted his pilot's certificate by the school, he is sent to England for further training, and his fare is paid by the British Admiralty." [Candidly we do not believe it.—Ed. AEROPLANE.]

\* \* \*

A Canadian in Government employ writes:—"I knew an E. L. Janney who owned a garage in Galt, Ontario. He owned it for about eight months then collapsed beneath a pile of hotel bills accumulated in New York, Toronto, Buffalo, etc. The last time I saw him he was racing from Galt towards the American line. I learnt afterwards that he was in the hands of the police. After the bankruptcy proceedings I lost sight of him."

[Evidently the same Janney who bluffed the Canadian Government and the Aero Club of America, but not the simple-minded British officer-aviator. This Janney has now been fairly effectually exposed, and one hopes it will not be necessary to refer to him any more.—Ed.]

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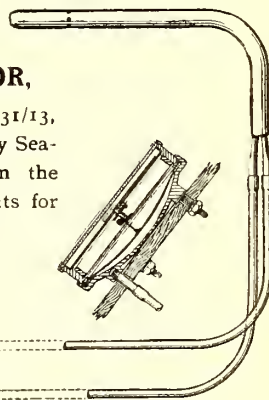
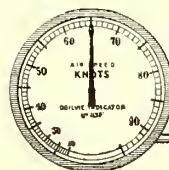
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**CAPE COLONY.**

The following extract from the "Weekly Cape Times," of April 23rd, refers to the deaths of Lieuts. Morgan and Irving at Neuve Chapelle:—

"Mr. A. M. Irving, of Paarl, has received the following letter from an officer of the Royal Flying Corps in reference to the death of his son, Lieut. A. G. Irving, R.E., who was attached to the Royal Flying Corps, and was killed at Neuve Chapelle: 'Will you allow me to offer you my sincere sympathy in your loss. Your son had served with me for several months, and his loss is a terrible blow to me. He was observing artillery fire with Morgan during the attack on Neuve Chapelle, and from the accounts we hear the machine was hit by a shell. He was doing invaluable work, and taking big risks. He could not have given his life in any way more valuable for his country. Our task was to keep down the fire of the German batteries during the attack, and the artillery general has told me that, through our efforts, the losses were very small. Your son was the gallantest fellow I have ever worked with. His complete indifference to shell fire and bullets amazed me. He was an excellent officer in every way, and his death is an irreparable loss to us and to his country. In every detail of his work he was thorough and full of useful ideas.' "

**SOUTH-WEST AFRICA.**

Reuter's special correspondent with the Central Force, writing from Aus on April 20th, says:—

One result of the very rapid movements which the Central Force has effected during the past week is a budget of information and comment from the German point of view concerning this expedition of the Union troops. The force comes across an official order here, a newspaper (mostly the Windhuk "Sud-west") there, a letter in another place, and so forth. The papers and documents that have come my way range in date from last November to this April 1st. They provide some choice reading. . . . On December 18th the Windhuk paper received a message to the effect that "Flight-Lieut. Felder, at a height of 1,100 metres, dropped with effect two bombs in the English camp at Tschaukaib. . . ."

In the "Zeitung" of December 10th last, published in Keetmanshoep, is a record by Lieut. Von Scheele of his first aeroplane trip from Aus to Luderitzbucht. The aviator had an evident eye for the picturesque, and his account is not without a certain romantic interest. He left Aus at 4.30 a.m., and after reconnoitring over Luderitzbucht for an hour, was back again at seven o'clock.

He flew a German-made machine which was not adapted to flying conditions in the colony, and consequently his journey was not unattended by risks that are usually absent from flights over the Continent. "The machine was sent over for trial purposes to this country, where ascending is more difficult than at home. Nearly all German flying grounds are situated at a small height above sea level. Aus, on the contrary, is five thousand feet above sea level, and immediately after ascending I have to go a thousand feet higher still, as the hills round the valley of Aus have to be crossed. . . . A machine to suit local conditions does not exist." Such a machine (he notes) will require to have bigger wings and a stronger motor than the one he was flying.

Returning via Kolmannskuppe, he found flying in face of the glaring sun very strenuous work. Finally he vol-planed from a height of 2,300 feet. Though Union troops declared they saw an observer in the machine, Lieut. Von Scheele asserts he travelled unaccompanied.

**SOUTH AFRICA.**

From the "Cape Times," May 7th:—

The following has been officially communicated to the Press: The German aeroplane has not paid any visits to our troops in G.S.W.A. for several days, and from reliable information to hand it would appear that the German aviator has received severe injuries as the result of a fall. Our own aeroplanes have at length arrived from Europe and will be operating within a few days.

**JAPAN.**

The "Manchuria Daily News," May 5th, says:—

The officers attached to the Oppama and Tokorozawa Aerodromes, upon receipt of secret telegrams yesterday afternoon (that is, about the time of Japan's ultimatum to China) held conferences.

**AUSTRALIA.**

It is good news to hear that some attempt is being made to develop the Australian Flying Corps. In addition to instructional work at Point Cook, preparations are being made for the establishment of a factory there. Recently the Minister of Defence drew the attention of the engineering firms of the Commonwealth to the project and invited tenders for the building of aero engines. Many responses have been received and soon motors of the Renault type will be ordered. The construction of a biplane, presumably of R.A.F. design, has been commenced, and further ones are to be commenced shortly. Some difficulty is being experienced in the supply of timber, which, of course, has to be imported.

As the detachment left by the R.M.S. "Orontes," Lieutenant W. H. Treloar, one of the members of the Aviation Corps, made a flight over the city at a height of 6,000 feet. On his way back he passed over Port Melbourne to bid them good-bye.

The "Argus," May 10th, says:—

"Mr. J. B. Cussen, son of Mr. Justice Cussen, will leave Melbourne to-day by the s.s. 'Nestor' to take up military aviation in London, where a fellow Old Xavierian is acting as instructor."

The "Sydney Herald," March 29th, says:—

An Italian aviator, the Conte di Gueldi, arrived in Sydney by the Orient liner "Orontes," bringing with him a Farman biplane. He has been lent to the British Government for instructional purposes in Australia for four years. He is a lieutenant in the Italian Navy. [In which case he will probably have to go home.—Ed.]

The Federal Executive Council has approved of regulations framed under the War Precautions Act, 1914, whereby the registration of aircraft is made compulsory. The regulations, which are cited as the Aerial Navigation Regulations, 1915, lay down, among other things:—

1. Any person who at the commencement of these regulations has in his possession, or who at any time after the commencement of these regulations becomes the possessor of an aircraft, shall within 30 days after such commencement, or after so becoming possessed, apply to the commandant of the military district in which he resides for registration of the aircraft.

2. Upon application being made to the commandant of a military district for registration of an aircraft, the commandant may register the aircraft, or refuse to register it, without assigning the reason for his refusal.

3. The commandant of a military district may at any time, for reasons which appears to him sufficient, remove from the register the registration of any aircraft, and thereupon the aircraft shall cease to be a registered aircraft.

Failure to comply with the regulations renders the person so offending liable to a fine of £100, or six months' imprisonment, or both. The regulations, which are dated March 10th, come into immediate operation.

The "Argus" (Melbourne) of April 13th publishes the personnel of the flight of aeroplanes which is being sent to India. Capt. Petre is in command and will have with him Capt. T. W. White and Lieut. G. P. Merz. In addition the flight will consist of one foreman artificer (warrant officer), one staff sergeant, one farrier sergeant, one sergeant, three corporals, 12 air mechanics, 15 drivers (for mules), four batmen and two cooks. The flight will be provided with its own transport vehicles, but will not take an aeroplane.

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From the "Argus" of April 13th:—

"An important step has been made in the advancement of aviation in Australia. In November of last year an Aero Club was formed at Point Cook by the instructors of the Central Flying School, Capt. Petre, Lieut. Harrison, and the first officer aviators who had obtained their pilots' certificates at the school—Capt. T. W. White, Lieuts. R. Williams, D. T. Manwell, and G. P. Merz. . . . It was then decided to form an Australian Aero Club to advance the cause of aviation, to be a controlling body and a social club. It was resolved that efforts should be made to conduct the school on the lines of the Royal Aero Club of Great Britain. . . .

"As a result of this decision arrived at, the inaugural meeting of the Australian Aero Club was held on Friday (April 9th) night last at the Café Français, when military officer aviators and others met to elect office bearers and lay down the work to be carried out. Capt. Petre presided. Lieut. W. Sheldon (R.A.F.A.) was elected secretary in place of Capt. White, who is leaving shortly for the front with the Flying Corps. A committee was elected to draw up the rules to be placed before the next meeting, which will be held shortly, and to fix the qualifications for members, and some new members were elected. The members of the committee are as follows: Major E. Harrison, Lieut. E. Harrison, Capt. T. W. White, Lieuts. Ralfe (R.A.G.A.), G. P. Merz, and Mr. T. Reynolds. It is recognised by the founders that the membership will not be large. . . .

"At the conclusion of the meeting, Lieut. E. Harrison proposed the health of Capts. Petre and White, and wished them a safe return. The toast was duly honoured and appropriately responded to."

### The Week-end at Hendon.

There was plenty of sunshine at Hendon last week-end, although this was more to the advantage of the visitors than the pilots. On Saturday the first machine out was a Grahame-White biplane in charge of Mr. Osipenko. Mr. Manton was also out on a similar machine; Mr. Roche-Kelly flew a Beatty-Wright twice in his usual interesting style, and Mr. Moore made four flights on his 45-h.p. L. and P. Caudron. Mr. Osipenko made five flights on the five-seater Grahame-White "omnibus" with passengers, and the numerous visitors had no complaints to make as to the entertainment they had received.

On Sunday there was a good attendance. The air was very bumpy, and for some time passenger flights were not available. The chief event of the afternoon was the new British altitude record set up by Mr. Harry Hawker, a description of which will be found elsewhere. Mr. Osipenko gave many flights on a box-kite, and Messrs. Manton and Winter were also busy in a similar machine.

Mr. Hall came out on a Caudron, and after a long flight at a good height made a very pretty descent with his propeller stationary, at times diving vertically in a manner which seemed to indicate a loop in the style of the olden days before the war, when pilots did not care what they did, and sensations were provided wholesale for the admiring crowds. Mr. Roche-Kelly went up several times, with and without passengers.

Later on in the evening the five-seater was produced for the benefit of a goodly collection of military passengers, Mr. Manton taking them up in twos and threes to their evident satisfaction. Altogether the week-end was quite interesting.

With the resumption of the tramway service the Hendon Aerodrome is now within easy access from all parts of London by Underground, tram or motor-bus. Exceptionally good flying by pupils and pilot instructors of the various flying schools was witnessed at the Aerodrome during the week-end of May 28th and 30th, when no less than ten machines of various types were out, including the 100-h.p. Grahame-White biplane.

Passenger flights are greatly in demand, especially by naval and military officers, and pupils at the Hendon flying schools have often received their "baptism of the air" in the form of an ordinary passenger flight during one of the week-end displays; in fact, many of our best service pilots have been first attracted to aviation by a casual visit to Hendon.

### THE BRITISH HEIGHT RECORD.

It is with pleasure that one records the capture of the British altitude record by the Sopwith Company, when on Sunday, June 6th, Mr. Hawker took up a Sopwith biplane to something just over 20,000 feet.

The previous official record was held by Squadron Commander E. F. Briggs, R.N., D.S.O., with 14,500 feet, some eighteen months ago, on an 80-h.p. Blériot. Contrary to the report in the "Times," this altitude has been exceeded on several occasions, although not officially recorded, notably by Major Becke, R.F.C., and Mr. Norman Spratt on R.E. biplanes, and by Mr. F. P. Raynham on an 80-h.p. Avro.

It would be interesting now to see one of the firms building scout biplanes send a machine round a marked course under official observation and try for the speed record at present held by the late Mr Gustav Hamel. This record dates back to 1911, and in view of the enormous progress in speed since that period it is obviously desirable that official note should be taken of current performances. As it is, the present record is liable to mislead those who are not directly in touch with the progress of aviation in this country.

Mr. Hawker flew a two-seater biplane with an old standard type 80-h.p. Gnome engine, so that his performance compares very well with the World's Record held by Herr Oelerich on a D.F.W., with a 110-h.p. 6-cylinder Mercedes engine, made just before the war.

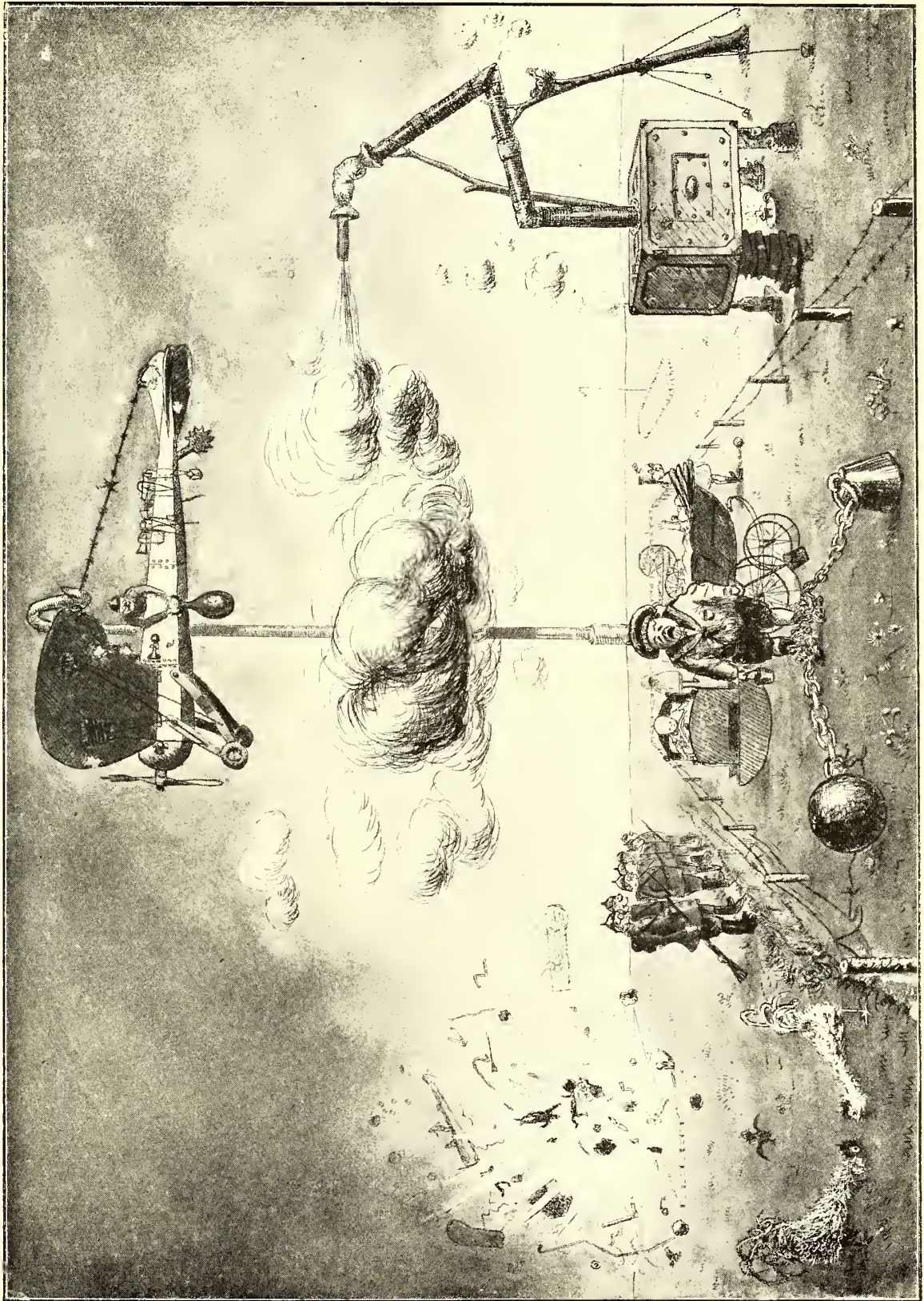
The following descriptive account of the flight is contributed by an eye-witness:—

On Sunday Mr. H. Hawker established a new British height record, the first British record we have seen for many a long day. A week previously he had made an attempt on a Schneider-Sopwith at Brooklands, but on reaching the Archibald-proof height of 11,000 feet he was so cold that he gave it up and came down. This Sunday, however, he was entirely successful. He flew from Brooklands to Hendon shortly before lunch in a new 80 Gnome Sopwith, which had only been completed the evening before, covering the 21 miles in 13 minutes. This fact in itself speaks volumes for the work turned out by the Sopwith staff.

At 4.15 Mr. Hawker started up in a very bumpy air. In 1½ minutes he was 1,000 feet up in a blue sky. In 20 minutes he had reached a height of 10,000 feet, and everyone at Hendon had a stiff neck and spots before the eyes. The Sopwith dodged about the light, fleecy clouds, getting more and more like a tiny gnat, and at last completely vanished. The man with the megaphone announced that various other pilots were making flights on various machines, accompanied by sundry passengers, but all interest in the higher regions had by this time been exhausted, and the tea-shop got busy. Even the appearance of the great five-seater aroused little more than passing comment by reason of the clouds of dust it produced on a preliminary engine trial. An hour and a half after Mr. Hawker had ascended his machine was suddenly discerned on the northern side of the aerodrome nearing the ground. When almost on the grass he started his engine again, by way of showing that he was in the best of health and spirits, and he made several circuits of the aerodrome at a speed of 90 miles an hour. When he landed it was found that the limits of his sealed barograph, which only registered up to 20,000 feet, had been exceeded, and he was accorded an enthusiastic reception on the creation of a new British height record.

He informed a representative of THE AEROPLANE that beyond a slight bleeding of the gums he had experienced practically no discomforts, with the exception of a natural coldness. The last 100 feet took eight minutes to climb, and the engine, with a specially designed Lang propeller, which gave 1,300 revolutions per minute on the ground, had dropped to 1,100 by the time the barograph had reached its limit, and he decided to come down. The descent took 17 minutes, and the landing was perfect. The new Sopwith is a fine specimen of what British workmanship can do, and the congratulations which were showered on Mr. Sopwith and the brilliant pilot were thoroughly well deserved. We may look for more Sopwith records in the near future.—D. W. T.



**LEARNING? FRIGHTFULNESS.**

Purely imaginary portrait of a German aviator learning to drop bombs so as to produce the approved effect on "fortresses" such as Southend and Ramsgate. The artificial cloud-producer should be noted.



**THE INVASIONS OF ENGLAND.**

On June 2nd an inquest was held on the bodies of Henry Thomas Good, 49, and his wife, Caroline Good, 46, two of the victims of the German air raid of May 31st.

The Coroner said that the jury were inquiring into the cause of death of two innocent persons who were apparently burnt to death by the explosion of a bomb dropped by a Zeppelin by the orders of the German Army, he supposed. It is not desirable, he added, to make much commotion about this matter. If they were able to record the circumstances of the deaths they would be doing all that is desirable in the case.

A constable stated that at 11.5 he saw a bomb fall upon the Goods' house. He heard the sound of machinery in the air, and suddenly the house burst into flames. A woman appeared at the top-room window, but was unable to get out. With the assistance of other persons he held a blanket and asked her to jump. She did so, and was slightly injured in the fall. About midnight he was informed that two bodies had been found in the back room on the first floor. He climbed a ladder at the back of the premises and saw Mr. and Mrs. Good kneeling by the bed. Evidently the man had had some clothes on, for there was a band of a guernsey on his right arm, which was around the woman's waist.

A constable produced the remains of two bombs: One, he explained, had fallen through the roof and through the front rooms. The other had dropped through the roof and on to the staircase and had set fire to the stairs. The constable added that both were very heavy.

The Coroner remarked that they did not seem to be very finely finished, but apparently they were very effective. They contained an explosive called "thermit," which was invented some years ago. This substance was mentioned in this paper last week.

The landlord of the house stated that he and his family were on the floor below that occupied by Mr. and Mrs. Good. He heard a bang and the place was in flames directly. He, his wife, one son, and three daughters all got out safely. Then he called Mr. Good and threw a brick at his window to wake him. Getting no answer, he concluded that Mr. Good had gone out.

The jury returned a verdict "That the deceased died from suffocation and burns, having been murdered by some agent of a hostile force."

The Coroner said there seemed to be only one argument that was of any avail. The more men that could be got to enlist the better it would be for the country. [One may perhaps suggest that enlistment is not so necessary as real work by those who stop at home and play at making ammunition. Coroners should stick to coroning.—Ed.]

Another inquest was held on the same day on the body of a child named Elsie Lilian Leggett, aged three, and the jury returned a verdict that the child died from suffocation and burns as the result of an incendiary bomb dropped from a hostile airship. Mrs. Leggett said that a bomb fell through the roof into the bedroom where her five children were sleeping. Her husband got four of them out, and in the excitement he was under the impression that all five had been saved.

Lieut. E. T. Cobbett said that a label had been found showing that the bomb had been made at Krupp's, Essen. All the bombs had handles, and it might be of use to the public to know that with a pair of tongs or a piece of stick they could be thrown out of a window before they had a chance of setting fire to a place.

Inquests on the bodies of two more children, victims of the raid in the metropolitan area, were held on June 3rd. The children were Samuel Reubens, aged eight, and Lily Lehrman, aged 16. A police constable who was on duty about 11 p.m. said he found the body of the boy lying in the doorway of a private house. He picked the boy up, and also the girl Lehrman, and with a man, who was injured, they were conveyed to hospital.

Medical evidence was that in the boy's case there were wounds in the abdomen, but nothing to show how they were caused. There were, however, some pieces of metal found in

the left shoulder. There were also injuries to the legs and hands. Death was due to hemorrhage and to shock consequent on the injuries. The girl had a wound in the neck and laceration about the head, from which fragments of metal were taken. There were also a deep lacerated wound on the right breast and injuries to the elbow and thigh. She died after about 12 hours in hospital, death being due to fracture of the base of the skull and a lacerated brain.

The Coroner said that he did not think there was anything to be gained by bringing in a verdict of murder, though there was no doubt, from a moral point of view, that it was murder, and murder of a most despicable character. He advised the jury to bring in a verdict "That the deceased persons died from injuries received from bombs dropped by hostile aircraft."

The jury returned a verdict to this effect, and expressed their sympathy with the relatives.

\* \* \*

It is a strange whim of Fate that every victim of these raids should have been a person entirely ineligible for military service. One would not wish to dispute the truth of the statement that not a sparrow falleth to the ground without Divine cognisance of the fact, but one could wish that a little more discernment were exercised in the guidance of aerial bombs when in the vicinity of women and of small children.

\* \* \*

The official communiqué issued on June 1 in Berlin on this subject says:—

"As a reprisal for the bombardment of the open town of Ludwigshafen, we last night threw numerous bombs on the wharves and docks of London."

As far as the wharves and docks are concerned one is forbidden by plain common sense to state how many of these useful institutions were hit, but at any rate the damage is not perceptible to the naked eye.

\* \* \*

The German war news, officially circulated through German wireless stations, contains the following:—

Berlin, June 3rd.

"The Wolff correspondent at Amsterdam learns from a good source that at the last Zeppelin raid on London an airship reached Finchley, in the northern outskirts of London, and it must have flown over the greater part of the city. According to the same source the damage caused is much greater than has been announced."

Somehow a line from Brentwood to Finchley seems a long way off any "docks and wharves," so the two accounts scarcely tally.

\* \* \*

A highly interesting and somewhat amusing announcement was made at the Special Court of the London Hospital on June 2nd. In the absence of Lord Knutsford, Mr. W. T. Paulin presided. In answer to a question, it was stated that information had been received from the War Office to the effect that an agreement had been come to between the British and German Governments for the protection of specified buildings. Such buildings are to be marked with a black and white square and include museums and churches and hospitals and, it was understood, infirmaries.

On the whole the idea seems fairly feeble, so one may suggest that a better way to ensure this immunity would be for the opposing forces to give each other the plans and the precise range of their various fortifications and other points of purely military interest, and also to light up their ammunition factories, etc., at night, so that no mistake may be made.

In the meantime we trust the Censor will permit us to remark that one of the most effective bombs in a recent raid fell within a stone's throw of a Nonconformist church, and, under the circumstances, it would be more satisfactory from this nation's point of view that the said church, or any other, should be hit than that the bomb should fall on an explosives factory.

When one comes to consider that matter carefully one is divided in mind as to whether it is better to mark the places one does not want hit, on the principle that hostile aviators or aeronauts are sure to try and hit them, and are equally sure to miss them, or whether one should mark places that do not



matter with the deliberate intention of inducing the enemy to waste bombs on them.

\* \* \*

Count Reventlow writing in the "Deutsche Tageszeitung" says:—

"The German attack on the outer forts of London must have been very successful, otherwise the orders of the Press Bureau would not have been issued. We hope that in the fine summer weather the activity in the air will be very great over Britain, not in small patches to make slight unrest, but on a great scale regardless of everything, so that it, either directly or indirectly, will have some influence on the further course of the war. Pinpricks and half-measures are worse than no good; they are even dangerous. The air war against England must either be on a great scale or nothing at all except for small tasks for purely military purposes."

He is quite right, for his "pinpricks" are gradually waking up the English population of these islands and are leading the Celtic population to hope that something sensible in the way of National Service may result. A few raids over the Northern and Midland manufacturing centres would do no end of good.

\* \* \*

The "Neueste Nachrichten," the principal Leipzig paper, has quite an amusing article on the visit of the Zeppelins. It reads like one of those silly outbursts in our own papers against German "frightfulness." In fact, the English and German papers are far more alike than either of them are like the French, Scottish, or Irish papers.

"Now the Zeppelins have come, and flames and smoke mark their path. They did not wait on wind and weather, but came exactly at the hour when the English cup of iniquity was full, just as the first drops were brimming over. In the preceding week eighteen French aviators bombarded the open town of Ludwigshafen, which possessed not the slightest military importance and had no military defences. There were twelve people killed in this infamous attack on Ludwigshafen. They lie before us, senselessly murdered, and the inhabitants of the unhappy town can only stand and gaze powerlessly at the aerial pirates. Powerlessly? No! We too have a weapon, the weapon of reprisal. And this time we have not silently accepted

the latest misdeed of the enemy, leaving it to the judgment of history.

"No! This time the cup was full, and quietly and deliberately we grasped the weapon of reprisal. A brief telegram, and soon the propellers of the Zeppelin began to revolve, whilst the commander opens his sealed orders: Course, London; object of attack, the docks and wharves. Great God, at last! Like an organ tone in the sky is the hum of the propellers. This is no ordinary war; it is a crusade, a holy war. And there lies the giant city, in which for fifty years they have worked only evil against us, where hatred of us has been sown, and where only a few days before the mob, like a pack of bloodhounds, had harried our defenceless compatriots. London lies beneath us, the heart of the British world empire! A moment which sets the keystone to the life work of Count Zeppelin. London bombarded by German airships! When the wire carries this news to the German battle front it will everywhere call forth the greatest joy. For everyone knows that England is our worst foe. And this England has now found its master, the master of the air."

[For the fact that Zeppelins are able to come and go unopposed we may blame the financial side of the late Government and the ineptitude of Lord Haldane (who now draws £2,000 per annum pension), and one Seely, Lieut.-Col. (T.), temp. Brig.-Gen.—Ed.]

\* \* \*

The Secretary of the Admiralty made the following announcement on June 5th:—

During last night hostile airships visited the East and South-East coasts of England.

Bombs were dropped at various places, but little material damage was done.

The casualties so far reported are very few.

\* \* \*

In a further announcement the Admiralty said:—

It is now possible to state definitely the number of fatalities caused by the hostile air raid which visited the neighbourhood of London on the night of May 31st. The number is six—one man, one woman, and four children. This number does not include the case of an elderly woman, whose death was attributed to shock caused by the raid.



*Photograph by F. N. Birkett, 97, Percy Road, Shepherd's Bush, W., from whom copies may be procured.*

**OFFICERS OF THE R.N. AIR STATION AT CHINGFORD.**—Top row, left to right: Flt. Sub-Lt. C. C. R. Edwards, Flt. Lt. L. D. D. McKean, Flt. Lt. C. W. Culford, Flt. Sub-Lts. R. H. Rontledge, J. S. Morrison, Talbot, H. S. Kerby. Bottom row: Flt. Sub-Lieuts. T. C. Maclaren, G. F. Smylie, F. J. E. Feeney, Flt. Lt. F. W. Merriam, Flt. Sub-Lts. E. de Ville, H. C. Vereker, and L. E. R. Murray.



The Press Bureau announced at 2.25 p.m. on June 7th:—  
The Secretary of the Admiralty makes the following announcement:—

A Zeppelin visited the East Coast during last night.

Incendiary and explosive bombs were dropped, causing two fires, and resulting in five deaths and forty injured.

\* \* \*

One fails to see what object the Admiralty or the Press Bureau can have in hiding the general locality of these raids. It might be difficult on a dark night to tell whether one was over Walker Gate or Newcastle City, but it would not be difficult to tell whether one was over "Hull, Hell, or Halifax"—as the saying has it—for much as those places may resemble one another at night the airship's "dead reckoning" would give some rough idea of its geographical position. It might be difficult to distinguish Greenwich from Blackheath Hill, or Rochester from Chatham, but there would be no chance of mistaking Sheerness for Southend or vice versa, so what is the good of irrational secrecy? It merely increases distrust.

A more sensible plan would be to publish, along with the truth, a large amount of carefully concealed and deliberate lies, calculated to deceive the wily Teuton on his next visit. Also, a regular service of bogus signalling should be organised, with the help of the German secret signal code, which could doubtless be obtained by offering adequate reward.

\* \* \*

"The Man in the Street," writing on the subject of Zeppelins in the "Daily Sketch" of June 2nd, says:—

"The misfortune is that years ago the authorities listened to a band of young and narrow-minded 'experts' who maintained that the Zeppelin was utterly useless as a destructive agent, and could never be developed to a practical stage. It makes me angry to look back on those wasted years when our people sneered and doubted and did nothing. . . . On a dark night the Zeppelin is in its element, whilst it means almost certain death for an aviator to go up unless he can keep flying until daylight shows him a safe landing place.

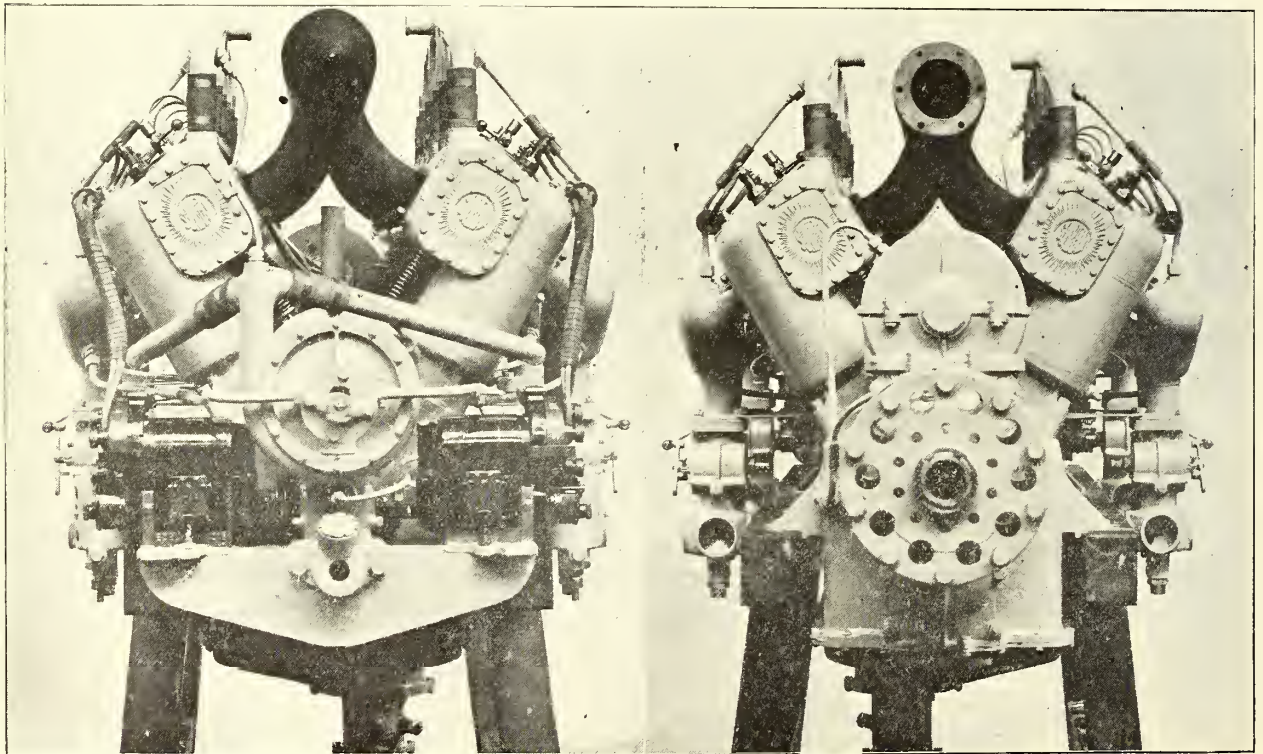
"We neglected the airship in years gone by, and we are paying for it now as much in remorse as in actual loss. It

is not flattering to us as a nation that London can be raided and people killed. We ought to be able to hit back at night when we could do military damage in Germany. Our brave airmen take the tremendous risk of day flights into Germany, and they have done much damage, but since they are under observation they are limited in their activity. The Zeppelin steals out at night and reaches England, where it can accomplish wanton destruction of the kind which delights the German heart. . . . The unhappy part is that hitherto we have been at a technical disadvantage in fighting the Germans at night, for the best plan is that of meeting airship with airship.

The point which "Man in the Street" misses, in common with most men in the same place, is that until war broke out we had so little money to spend on Naval and Military aeronautics that it was better to build cheap aeroplanes than expensive airships, just as a small country would be wiser to build many submarines and destroyers than one or two super-dreadnoughts. Hence our lack of airships. That our policy was justified is shown by the fact that our aircraft are, in certain types, the best in the world, and that they saved the Allied Armies at the beginning of the war, which is a much more important service than saving London from a few bombs.

There is no particular difficulty for a good pilot in flying and landing in the dark if he has a reliable engine. What he wants is something to fly at. Trustworthy witnesses who watched the bombs falling from the Zeppelin on the outskirts of London were utterly unable to see the craft itself from firm foothold on the ground. The difficulty about seeing a similar object from an aeroplane or another airship is intensely greater.

Apart from this, it may be taken as an axiom that it is at least ten times as easy to make an air raid as to repel it—witness the enormous number of successful and effective raids on predetermined objects of military importance made by British and French pilots in broad daylight! As a matter of fact air raids at night must be ineffective because it is impossible to distinguish the particular spot to be aimed at. Anyhow, up to the present we have a distinct balance in our favour both in the number of bombs dropped and of damage done. Anyhow, the latest affair in Flanders puts a different complexion on the problem.



The pump end and propeller end of the 12-cylinder 225-h.p. Sunbeam-Coatalen Aircraft Motor.



## Aero-motors: In Kind and Construction.—(Continued)

BY GEOFFREY de HOLDEN-STONE.

Rampant catholicity is nonconformity's chief excuse. Only when you see it at its largest do you grasp the spiritual necessity of Covenanters, Wee Frees, Bush Baptists, and such-like; the eternal need for difference. Truly, one may be bored to tears with beauty's self: and we all remember the plainness—and the charm—of the young lady named Jane. It is just this lack of difference that makes special editions so uninteresting. They are only bigger, rarely anything else. So having said that the 225-h.p. twelve-cylinder Sunbeam motor has four sets of three cylinders apiece: that each pair of these are mounted at 60 degrees instead of 90, to the other pair; and that they seem to require four carburettors instead of two—one has said practically all that has not already been said about the smaller 150-h.p. model. Except that it rather more than makes good its excuse for sameness.

For appropriately one may here say—not hearsay—of both that they manage to get all their horse-power on a petrol consumption of a little over half a pint per h.p. hour, all out: and half to three-quarters of a gallon of lubricant. The weight per h.p. all on—but without radiators or water—is just a few grains over four pounds; which is probably the limit of the motor-car type of design in four-stroke practice, and is certainly not excessive for aeroplane uses.

Of course, the carburettor that can accomplish these results must necessarily be a good one. Whether it be specially better than any other might just as well have been; or whether there be anything underlying its design beyond that wholesome desire for something effective but different anyhow—I cannot say.

Generally, on the subject of carburettors—and the advertisements thereof—I am like the man from ole M'ssouri: still waiting to be shown. There lives more faith in honest doubt, believe me, than in all their screeds.

With regard to the Sunbeam carburettor—which is all that presently matters—I merely consider it highly unlikely to “pond” or spew forth an unatomised stream of petrol—which is the vice of ninety-nine jet carburettors in a hundred—because the said petrol has to pass a sieve of gauze before it can get into any of the three concentric tubes comprising the jet. Rising first in the outermost tube No. 1, it has also to pass over the tubular lining which almost completely fills No. 1, before it can get through any of the transverse holes in No. 2,

“the depression tube.” Through this latter the bulk of the atomised petrol must be drawn at high speed, as the suction would then be stronger, and more direct throughout its area; naturally larger than that of the central No. 3 tube. But at slow speeds, with a weaker pull, the petrol would not rise so much in No. 1, as run direct into No. 3—more in a stream and less in a vapour—to make a richer mixture with the air above.

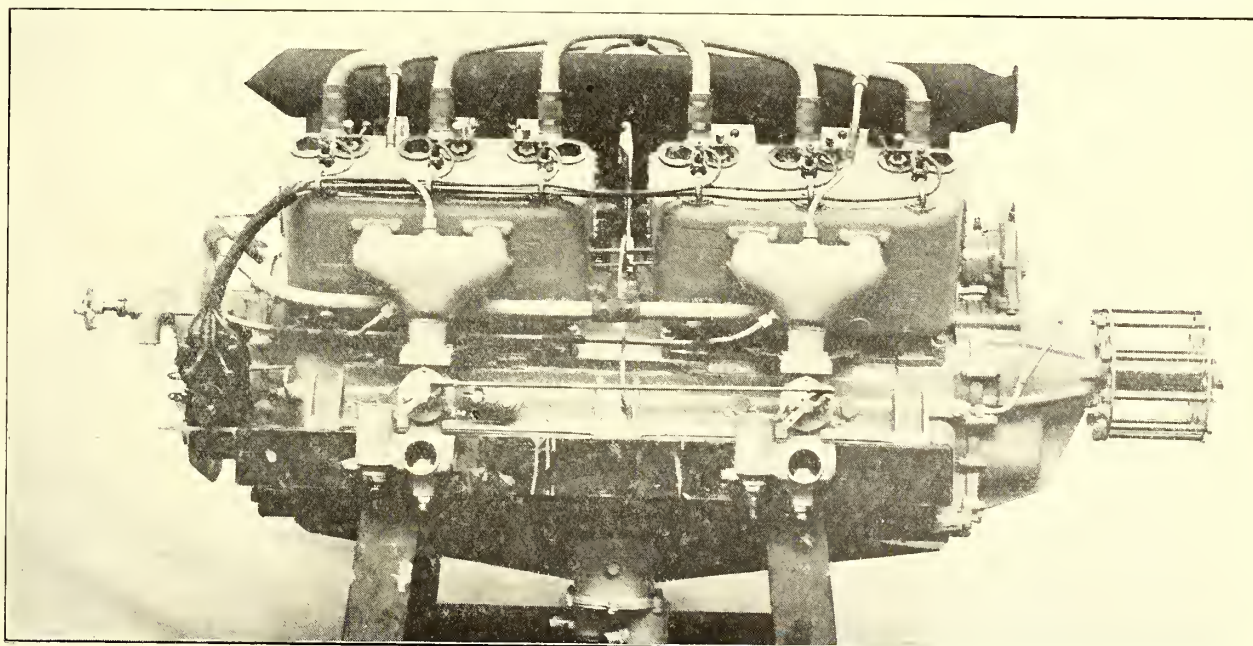
So the final working result seems to be a balance of pressures—or depressures—between No. 2 and No. 3, with the desired accompaniment of rather finer atomisation, as the balance favours No. 2; that is, when the suction—and hence the piston and mixture velocity—is increased by the opening of the throttle. It is all very well done; but it is not necessarily the only way. The entire jet—which is the best part of the design—is very accessible. The float chamber could not conveniently have been made concentric to it, which is always an advantage for an aeromotor. Why it is not even in transverse relation to the jet, instead of behind, I cannot pretend to say. Orthodoxy will out.

### The Starting Problem.

But apart from carburation—satisfactorily achieved, as we see—the chief problem in any of these high-powered aeromotors—the Sunbeam or any other—is that of starting. None, assuredly, is more urgent, as the machines of to-day are the merest skiffs to the great fighting aerial cruisers of an early to-morrow. And this is just where, and why, high-pressure, white-hot flash-generator steam—derived in quite a new way—and the liquid-ammonia turbine are both eventually going to beat the internal combustion motor aloft. But for the refusal of £100,000 of German money, the latter would be doing so to-day. For apart from anything else, theirs is a mere tap-turning, a valve-lift, to start; with no extra weight or appurtenance. It bears thinking on in the new way, bred of this wholesome war, without consideration of vested interests.

Meanwhile, the problem, so far as the internal combustion motor is concerned, rests between electric starting and the air-bottle mainly, with other mechanical means as a “tertium quid.”

According to our present lights, electrical self-starting devices



Photograph of the 225-h.p. 12-cylinder Sunbeam-Coatalen Air



seem to be out of the question for aeromotors, because of the weight of the essential storage-cells; although if there is one capacity in which they should otherwise work far better than they ever can in a motor-car, because of the even speed of the motor, this is the one. But if one may imagine a lighter cell than Edison ever invented for the delight of Park Row or Fleet Street, coupled up to the shelliest of flywheel ring-dynamotors, after the Sheffield Simplex fashion, for the purposes of a very big and powerful aeroplane, indifferent to an extra quarter hundredweight—well, one need look no further for reliability; and it would score over the air-bottle.

#### Other Possibilities.

Likewise as to the mechanical *tertia quia* it is possible enough that some of the coil-spring-cum-freewheeling ratchet devices that are the glory of cub show reporters, might repay development for aeromotors; or, failing these, some simple multiplying gear, with its leverage of long over short. Again, much might be done with that very effective combination of mixture-force-pump and ignition switch that only dropped out of motor-car make-up because it lumbered up the dashboard. So long as one had petrol it would always start. Meanwhile, there is the compressed-air-bottle, in one application or another, old as marine-motoring; known and tried so long that we know the worst about it: that worst being that its store of air does not last, unless you have a small air-pump worked from the motor constantly replenishing it. Practically, then, the only criterion of such a device is the quality of its make-up and detail fitting; which in the case of the Sunbeam outfit is very good indeed, although they seem to have forgotten the replenishing air-pump.

#### The Sunbeam Starter.

One gets a very fair idea of the general appearance and even the working of the Sunbeam self-starter if you imagine a rotary pump with a separately encased gear-drive—a very large one—immediately behind it. Only the internal difference is, that instead of any sort of rotary gear-pump, a slotted distributor plate is mounted on the shaft within the drum-space; the face of the said plate being in an air-tight, metal-to-metal fit with the inner face of the front-plate of the drum; into which the distributing pipe connections to the cylinders are inserted in a circle.

Into the top of this chamber the main supply pipe from the air-bottle is inserted, and slightly on one side an oil-pipe; the function of the oil being not only to lubricate as usual, but to

keep the stuffing gland tight which is mounted on the shaft, in the back of the drum or distributor body. Description is completed when it is said that in the back of this casting and in a cover plate extension, enclosing the driving-gear, the shaft-ball races are mounted: and that the gear itself is just a light toothed plate actuated from the cam-shaft.

#### How It Works.

The working of the device will be readily understood when it is said that there is only one slot in the distributor plate; and that this slot is of such a size that it is bound to coincide more or less with one of the six openings in the front of the distributor body, leading to the cylinder valve caps: so that there can be no dead point. Thus the air—which enters the cylinder through a small but strongly sprung cone-headed valve mounted, with its housing, in the valve cover—is bound to exert a push on one or other piston. The cam-shaft consequently rotates, acting upon the distributor gear, which naturally rotates the distributor plate and its slot into coincidence with another cylinder connection.

Now, one reason for past alleged—or actual—failures of the air-bottle system was that unthoughtful assemblers would not give the motor a chance to work as such, and so fitted a compressed air connection to each cylinder, or too many, instead of as few as possible. Naturally, the carburation was spoilt. Or they cut the distributor plate-slot too wide, and fed in too much air, with the same result. Or again, forgetting the run of the cycle, they fed to the wrong cylinders: or—in a V-type—to both batteries in the wrong order.

#### And Why So Well.

In the Sunbeam system, however, all these pitfalls have been avoided. There are only six feed-pipes, all of which—in the 225-h.p. model—run to the valve caps on the port side—which military pilots will excuse my reminding them is the left side, looking from behind—and to both sides in the 8-cylinder type.

Error has been avoided, too, in this last respect—and for both types—by the special order of the air-feed rotation. It kangaroos from No. 1 to No. 5, then to No. 3: next to No. 6: hence to No. 2, and finally to No. 4. Consequently—and indeed obviously—all the other cylinders are free—and have time—to go through their natural cycle of induction, compression, combustion and exhaust (without being disturbed in the least by the flood of compressed air) over at least two crank-shaft turns. Two to six of them—according to the type—never do anything else. And then, recollect, all the exhaust valves of

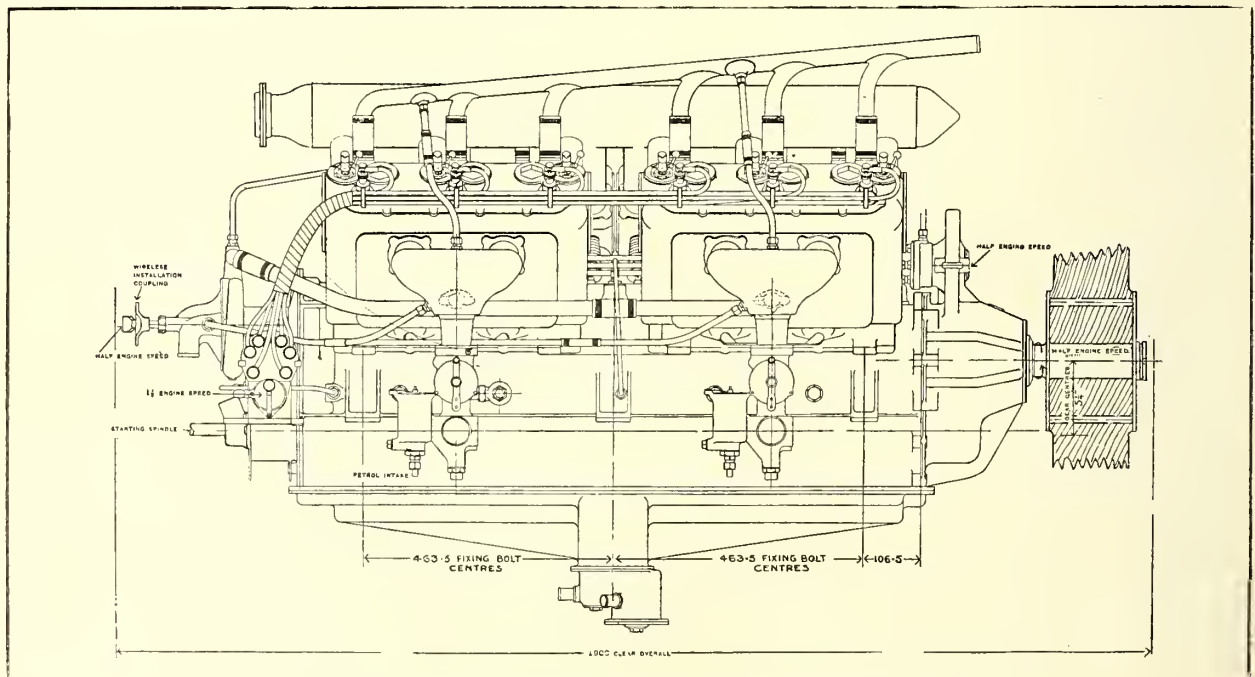


Diagram of the 225-h.p. 12-cylinder Sunbeam-Coatalen Aircraft Motor.

any one of them, are lifting in turn just as usual, letting the air escape, whether it has been effective or not—incidentally scouring the whole of the motor nicely—so that if the ignition has gone amiss, or from any other reason the motor fails to start, one can begin again on a new deal—so long as there is sufficient air left in the bottle. Why then did they leave the system short of perfection by forgetting the little air-pump?

#### A Useful Wart.

I am so confident that this little shortcoming will be amended, so assured that it must be, for any make of big motor using compressed air for starting, that I feel bound to show how it can be done, in the best Italian manner of not adding anything to the motor, but making an existing part fulfil a new function, as well as its original one.

It only means thickening the metal of the crank-chamber in one spot, sufficiently to form a tiny pump body when bored out for its cylinder and for the appropriate ports and connections, screwed thereto. And not an ounce of extra weight.

Did it ever occur to you that an ordinary valve jumping piece—being a dead-smooth, close-fitting spindle of sorts, bound in any case to move up and down under powerful spring control—would make a good pump-plunger if enlarged in the middle to form a small piston, and fitted with a little packing gland above and below?

Well, it does, anyway. The thing has been done, on one of the best-designed, most originally-detailed cars ever made in Paris; only to provide constant air-pressure in the petrol tank. The piston had only one-third of an inch stroke; but so did it deliver itself that had it not been for a very light-set excess-pressure bye-pass, it would have burst that or any other tank in the first quarter-of-an-hour's running.

You see the rest of the detail, of course, of this gadget that is really none, but only an alteration. On either side of the tiny main-cylinder, bored in fact out of the same hump in the crank-chamber metal, are two smaller ones each with tiny slits of ports at top and bottom into the pump-cylinder, and fitted with non-return valves in the connections which are set in to them at a right angle, half way up.

So that from one of these—the left one—one or other face of the piston is always sucking in air from outside; while the other face is compressing and delivering it through the port into the right-hand cylinder: and thence through a non-return valve into the connection to the air-bottle. In this case, no excess-pressure bye-pass is needed, unless it be a very hard-set one. But the connections will have to be of the best, with long cone-joints, or that little pump with its tiny stroke will assuredly burst them. . . .

So much for all the detail that counts in either type of Sunbeam aeromotor. Indeed, their very catholic resemblance to motor-car practice almost throughout—which detracts from their artistic interest as aeromotors—is really an advantage from the standpoint of looking after them and keeping them in proper tune. For, frankly, I do not see that there is anything special about them beyond the ready comprehension of any really first-rate chauffeur; such as he, for instance, who would be used to the refinements of a Rolls-Royce or any other of the half-dozen "best cars in the world." And as naturally, no owner could decently hinder such a man from doing his bit anywhere in France, it follows that the combination F.C. chauffeur—Sunbeam should be irresistible just now.

(To be continued.)

#### Presentation Aeroplanes.

On May 27th the Central Committee of the Over-Seas Club received from the Shanghai and Hongkong Banking Corporation the sum of £4,500, forwarded by the Governor of Hong Kong. The sum is intended to purchase two of the latest type of 100-h.p. Vickers gun-carriers, which complete with quick-firing gun cost £2,250 each. The white population of Hong Kong, including the garrison, is only 11,000, so it will be seen what an example of patriotism is furnished by the Colony.

#### Our Musical Nation.

The R.N.A.S. Air Mechanics at the Sheerness Training Depôt would be grateful for Gramophone Records. These should be addressed to "The Men's Mess Committee, Recreation Ground, Sheerness."

#### The Prevalent Disease.

Our tame poet has broken out again as a result of studying an engineering job at certain works at Hendon, while a mechanic was singing "Sister Susie." He asks us to try singing the following words, but we prefer to be excused:—Coan continues casting cunning cases, Such clean crank-cases come from Coan's and every crank-case lasts;

Some critic, maybe, curses

These commercial kinds of verses,

But NO critics curse the clean crank-cases Coan so kindly casts.

#### A Change of Address.

Cellon, Ltd., the well-known manufacturers of aeroplane "dope," announce that they have moved to more commodious premises in Broad Street House, New Broad Street, London, E.C., and that they cease to occupy their old premises. The telegraphic address and the telephone number remain as before.

It is exceedingly gratifying to place on record this change, as it indicates that the enterprise of Mr. A. J. A. Wallace Barr, in concentrating on the production of an article which at the time must have appeared merely to be a side line, has met with its due reward.

#### School and Weather Reports.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
East Coast ...	Fine	Fine	Fine	Fine	Fine	Fine	Fine
Hendon ...	Fine	Fine	Fine	Fine	Fair	Fine	Fine Windy
South Coast...	Fine	Fine	Fine	Dull	Fine	Fine	Dull
Lake District	Fine & Windy	Wet	Windy	Fine	Fine	Fine	Very Windy

**Hendon.**—AT THE GRAHAME-WHITE SCHOOL.—Instructors for the week: Messrs. Manton, Russell and Winter. Pupils with instr.: Prob. Flt. Sub-Lieuts. Blackburn, Hardman, Leigh, Pearson, Pennington, Wyllie, Cadbury, Watkins and Linnell. Pupils doing strts. alone: Prob. Flt. Sub. Lieuts. Blackburn, Leigh and Pennington. Pupils doing 8's or circs. alone: Prob. Flt. Sub-Lieuts. Simpson and Blackburn. Certificates were taken on May 31st by Prob. Flt. Sub. Lieut. Smyllie, and on June 5th by Prob. Flt. Sub-Lieut. Blackburn. Machines: Grahame-White biplanes.

**AT LONDON AND PROVINCIAL AVIATION CO.'S SCHOOL.**—Instructors for the week: Messrs. M. G. Smiles, W. T. Warren, W. D. Smiles, J. H. Moore. Pupils with instr.: Messrs. Nethersole, Dower, Wattinne and Moynihan. Pupils doing strts. alone: Messrs. Bell, Franchomme, Irving, Minter, Dower, Moynihan and Gunner. Pupils doing 8's or circs.

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alone: Messrs. Turner, Bell, and Franchomme. Certificates were taken during the week by Messrs. Turner (Monday morning) and Franchomme (Friday morning). Machines: Three L. and P. tractor biplanes.

**AT THE HALL SCHOOL.**—The pupils have received tuition every day of the week, both morning and evening. The following pupils are progressing exceptionally well:—Messrs. Furlong, Minot, Snook, Mitchell and Lieut. Raymond-Barker. The other pupils are progressing favourably. With Instructors Cecil Hill and H. James: Messrs. Bayley 42, Snook 100, Hammer 69, Hatchman 79, Snowden 87, Booker 65, Mason 37, Mitchell 65, Millbourn 58, Scott 58, Gay 56, Yonge 57, Lieut. Raymond-Barker 50, Lieut. R. C. Grant 52, Lieut. Jowett 25, and Lieut. J. R. Phillpott 47. With Instructor H. Stevens: Messrs. Lieut. Raymond-Barker 12, Minot 59, Furlong 87, Snook 32, Mason 9 and Mitchell 25. Mr. Hall took up the following pupils for passenger flights: Lieut. Phillpotts 10, Lieut. Grant 7 and Yonge 10. Mr. Stevens took up the following pupils for passenger flights: Lieut. R. C. Grant 12, Bayley 12 and Scott 12 on two-seater biplane No. 2. Machines: Hall (Government type) tractors. Anecdotes of the week: Mr. Scott tried twice to emulate Pegoud (but on the ground); luckily the machine, which is very strongly built, proved victorious over Mother Earth. Lieut. Jowett bombarded a flock of sheep with great damage to the enemy, but the machine sustained only slight injuries. The morale of our pupils is excellent.

**AT THE BEATTY SCHOOL OF FLYING, LTD.**—Instructors for the week: Messrs. G. W. Beatty, W. Roche-Kelly, C. B. Prodder, and P. A. Johnston.

Pupils at work with instructor: Messrs. Arbon (48 mins.), Banks (32), Bond (43), Broughton (15), Bush (20), Chalmers (95), Crossman (10), Delves (8), Eaton (102), Fawcett (25), FitzHerbert (43), Fox (37), Hodgson (30), Holland (48), Johnston (55), Jones (65), King (57), Morgan (27), Rawcliffe (25), Robb (44), Ross (63), Rutherford (24), Spicer (56), Tomlinson (83), Vickers (25), Whincup (20), Zimmermann (26), Hibbard (44), Theo (10), Coates (10), Blandy (10), Boyle (15).

Mr. P. A. Johnston took his certificate on Friday after only 2 hrs. 13 mins.' flying.

Machines in use: Beatty-Wright dual control and single-seater biplanes, Caudron tractor biplanes.

Exhibition flights were given on Thursday, Saturday and Sunday, and three passenger flights were taken. Extra practice was taken by Messrs. Boyle and Blandy.

**AT THE RUFFY-BAUMANN SCHOOL.**—Instructors for the week: Messrs. Edouard Baumann, Felix Ruffy, Gino Virgilio, and Clarence Winchester.

A great deal of constructional work has been accomplished lately at this school, mostly on a 50-h.p. Caudron type machine.

On Wednesday the following pupils were out with their allotted instructors: Bell, Crawford, Brown, Derwin-England, Cole, May, Leong, Fenning, Wallis, Hudson, Sykes. Thursday morning much practice was gained by all seven pupils aforementioned, school work commencing soon after 3 a.m. and not ceasing till 8.30 a.m. After that some pupils stayed for constructional tuition, while in the evening all were again out on the Caudron types.

On Tuesday evening Lieut. A. de Broughton passed for his certificate and made an exceptionally good glide. His landings were also within close distance of the prescribed mark.

**Windermere.**—AT THE NORTHERN AIRCRAFT CO., LTD.—Instructors for the week: Messrs. W. Rowland Ding and J. Lancaster Parker. Pupils with instr.: Prob. Flt. Sub-Lieuts. Perrett, Hume, Laver, Hodges, Graham, Messrs. Reid and Laidler. Pupils doing strts. or rolling alone: Flt. Lieut. L. L. Atherton and Mr. Slingsby. Pupil doing 8's or circs. alone: R. Buck. Machines: 50 Gnome Avro tractor biplanes, N.A.C. 80 Gnome monoplanes. One of the students had the misfortune to stall the Avro, with the result that she slide-slipped and did a vertical nose dive from 300 ft. Although the machine was fairly effectively "piled," the pilot was not injured in any way. Had such a smash taken place on the land nothing would have saved him.

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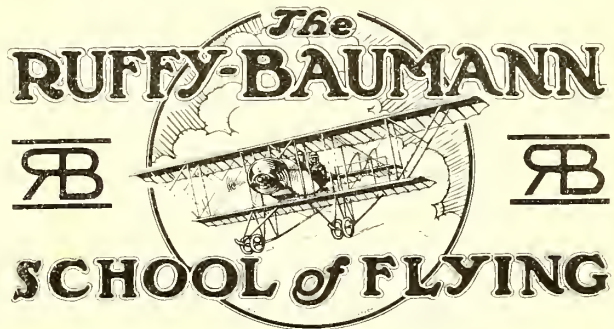
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12  
WEEKLY

Edited by C. G. GREY. ("Aero-Amateur")

VOL. VIII. [REGISTERED AT THE G.P.O.  
AS A NEWSPAPER.] WEDNESDAY, JUNE 16, 1915.

No. 24

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## On an Unattainable Ideal.

[POST SCRIPTUM:—The writer of the following articles wishes to state that they were written before Mr. Lloyd George made his speech at Bristol and without any certainty that the right hon. gentleman took any interest whatever in aircraft.]

It appears to a good many people who know something of the problems of supply and demand in the aircraft industry that there are distinct opportunities at the moment for a scheme whereby the industry might be better organised for the increase of output. Let it be granted at the outset that every firm in the country is turning out many times as many aeroplanes as the nation has the least right to expect, considering not only the mere lack of support accorded by the authorities before the war, but the actual repressive influence brought to bear on any attempt at real enterprise in the way of producing new and improved types of aeroplanes, and especially new types of engines. Moreover, the majority of firms have done splendidly since war began, despite the drawback of absurdly extravagant and unnecessarily complicated specifications which have been insisted upon in many cases.

Also, practically everyone in the industry has done his best to produce first-class work, and to use only the best material. Here and there, as in every country, there are black sheep who are careless of quality so long as they can produce quantity and draw their money for it. Here and there, men deliberately hide bad work, so as to avoid losing their pay for the time spent in producing it. Here and there, through cupidity or stupidity, generally the latter, suppliers of raw material supply bad stuff. Here and there, Trade Unions have endeavoured to murder our sailors and soldiers by calling strikes and holding up output. But, on the whole, the aircraft industry deserves to be congratulated on the way it has worked for the good of the nation to supply munitions to a Government which not so long since was going the right way to work to destroy the very source of such supplies.

For all practical purposes the British aircraft industry has only really come into being since war began, and, naturally, there must be defects not only in the organisation of individual factories but in the organisation of the industry as a whole. It is not quite clear as yet whether Mr. Lloyd George's new Ministry of Munitions is to include the supply of aircraft or not. If so, and if the right people have to handle the work, much good may be done, but if the wrong people tackle the job confusion will be very much worse confounded. Meantime, the various firms might do quite a good deal to help themselves and one another, and so ultimately to help the Flying Services, and the nation as a whole, if they would co-operate for their common good. It is a big problem to tackle, and it may be untackable, but it is worth discussing at any rate.

The proper people to tackle it would be the Aero Section of the Society of Motor Manufacturers and Traders, if that somnolent sub-section ever did anything worth while, and failing that, the Manufacturers' Committee of the Royal Aero Club would do well to meet and talk the subject over.

### An Original Scheme.

Right at the beginning of the war, one who is now an officer in the King's Service, and is doing rather more than well as such, propounded an ideal scheme of organisation, which, if it had been workable, would have vastly increased our output.

This notion was that the Naval, and, if possible, the Military, authorities—provided the latter could temporarily tear themselves loose from civilian official influence—should call a meeting of the head men of the aircraft industry and their chief technical men, at which the needs of the Services, in a general way, as to different types of machines required, should be put before the trade, and then the various firms should be divided off by mutual agreement between the Navy and the Army; so many to do nothing but Admiralty work, and so many to do War Office work, according to their previous experience and personal predilections.

So far, something rather like that has been done. Firms working for the Navy do not work for the Army, and *vice versa*, except in one or two cases where a new type of machine is produced which happens to appeal more to the other Service than to the one for which the firm is working. There was, however, no general meeting of the authorities and the trade to arrange the dividing up, and there was no attempt to organise the trade as a whole or instil into it regular *esprit de corps*, let alone national enthusiasm, or a "fine imperial fury," as might have been done. There has been plenty of individual fury, chiefly over being "messed about" in orders, inspections, specifications, and drawings, but that is not quite the same kind of "fury."

### Mr. Churchill's Effort.

The only effort in the right direction was made at the Admiralty some time last September when Mr. Churchill met the heads of the Navy's aeroplane builders to discuss the building of B.E.2cs. In that case his own energy and enthusiasm was, if anything, too infectious, for though a few of the hardened sinners of the trade refused point blank to touch the type, others were moved to promise delivery of their first machine in six weeks—thinking, of course, that it was an ordinary problem in aeronautical engineering, and not an exercise in a kind of airy differential miscalculus on the part of the designers—with the result that the best of them took three months to deliver, others took six months, and some never delivered at all, but shifted over to other types which were easier to make and no less effective. That, however, was not part of the original scheme.

### The Real Utopia.

The next step in the scheme propounded was that the heads of the firms and their designers should get together and evolve the plans for the types required. That is to say, the Naval firms would fix the designs for perhaps four types of machines, a light and a heavy seaplane, a "pusher" gun-carrier for land work, and a fast scout. The Army firms would do likewise for the Army. These designs would be absolutely standardised, and nothing else would be made for three months.

Each firm would be told off to make certain parts.



One group would make nothing but wings, or, perhaps, one firm would make nothing but one type of wing. Another would make nothing but fuselages of one type. Another would make nothing but floats. And so on.

The Crystal Palace would be taken over as an erecting shop, and all manufacturers would deliver their parts there by a special service of motor lorries, so as to be independent of railways, and consequent chaotic deliveries. All the erectors from the various firms would be concentrated at the Crystal Palace, and billeted in the outer buildings not required as workshops—this, of course, was before the days of the Royal Naval Division—and the erection of these standard type machines would go ahead at a rate never possible under any other system.

The only exception would be that each firm would be allowed to keep a few erectors and a small section of its shop to itself so that it could turn out a few experimental machines, which, if they performed well, or proved any new theory in design, would be considered at another meeting at the end of three months as possible alterations in the existing standard types.

The scheme was a thoroughly sound one, but it could only be worked under a benevolent despotism,

so that anyone who ran counter to the scheme could be taken out at dawn and shot by the Veteran Reserve, or could be subjected to some such appalling punishment. The flaw is that it depends on everyone sinking their own interests for the nation's good, and, of course, patriotism of that kind is out of date in these days. And think how such a scheme would interfere with the liberty of the subject, and vested interests, and all our other fetishes.

A man may go cheerfully and fight for his country, for there is a strong sporting element about it, and, anyhow, if he gets killed he is dead, and nothing else matters. But to ask a man who is a creative artist in his own line to admit that someone else's designs are better than his, and then to add insult to injury by telling him to disorganise his own factory in order to make these other designs, is rather more than a democratic Government dare ask of those who keep it in office and pay its salaries, though bureaucratic France has gone further than we have towards it. In these days we are neither Pagan enough to be intellectually honest and brutally thorough, nor Christian enough to be spiritually honest and thoroughly charitable to one another, so we must just rub along on compromises.

## On the Urgency of Organising the Industry.

When one comes to consider organising the Aircraft Industry under modern conditions one is up against a very difficult proposition. The chief difficulty is that very few men can absolutely trust one another, and fewer still realise that honesty is the best policy, considered purely as a policy. Some of the most unprincipled of men have built large fortunes and wonderful reputations for integrity on an appreciation of that simple fact; yet it is only the very big men who can see the value of honesty purely as a commercial asset. In all businesses all over the world everyone is always trying to "do someone down," or to "hot-stuff" him—in the vernacular of the aerodrome—into or out of something or other. Even in the Services there is not absolute mutual trust and co-operation, and those who were in South Africa may recall a generally believed instance of a senior officer deliberately withdrawing a force under one of his juniors which had Christiaan de Wet conveniently bottled in a kloof so as to prevent the junior from getting the credit of the capture, with the result that the elusive Christiaan escaped and lived to be a political nuisance for something like twelve years, and a rebel in his old age.

Still, if one cannot expect mere human beings like ourselves to trust one another completely, a proper system of organisation may make it worth while for everybody in the industry to co-operate honestly to their mutual advantage.

At present there is undoubtedly a great deal of overlapping of effort, and consequent waste of time. Saving of time means increasing output, and increased output means more money—putting the lowest valuation on co-operation, and leaving out the argument that increased output also means more new machines which are badly needed by our Service aviators.

### The Crying Need of the Flying Corps.

It is officially admitted that we need more high-explosive shells. We may as well admit that there is a crying need for more aeroplanes also. We may as well admit that machines on active service have to be kept flying for days, if not weeks, after they are due for overhaul, with the result that they stagger off with tired engines and soggy planes, and wander about over the German "Archies"—whose shooting is getting better and better every day—at half the

height they ought to reach. The result is at best punctured planes, and the fact that the tale of casualties is not higher is due more to the grace of God than to any ability of the machines.

Squadron-commanders are not altogether to blame, for Wing-commanders and still higher authorities expect a certain number of machines to be always in flying order, and a squadron that does not put up sufficient hours in the air is apt to be disliked, whereas if the flying officers of that squadron merely disappear towards Germany and do not return, that is the fortune of war, and another matter altogether, about which no awkward questions are asked.

The mechanics of the R.F.C. do their utmost—"and then some," as the Americans say—to keep engines and machines in a fit state to fly, but they cannot make new aeroplanes and new engines in marquees in Flanders, near as they get to doing so at times. What is needed is new aeroplanes and more new aeroplanes, and then new aeroplanes again. And that is why it is worth while to make some serious effort to organise the industry on a still more efficient system, or to institute some form of co-operation between the various firms, in their own interests as well as in those of the nation at large.

### Will the Industry Help?

If any aeroplane makers, or makers of component parts, have any ideas on this subject they will assist matters very materially by letting me know their views, and they may rely on these views being treated as entirely confidential if they so desire.

What I want to know is how may output best be increased with existing supplies of material and existing factories. I venture to give hereafter a few points which have already been suggested to me by men of experience in engineering production.

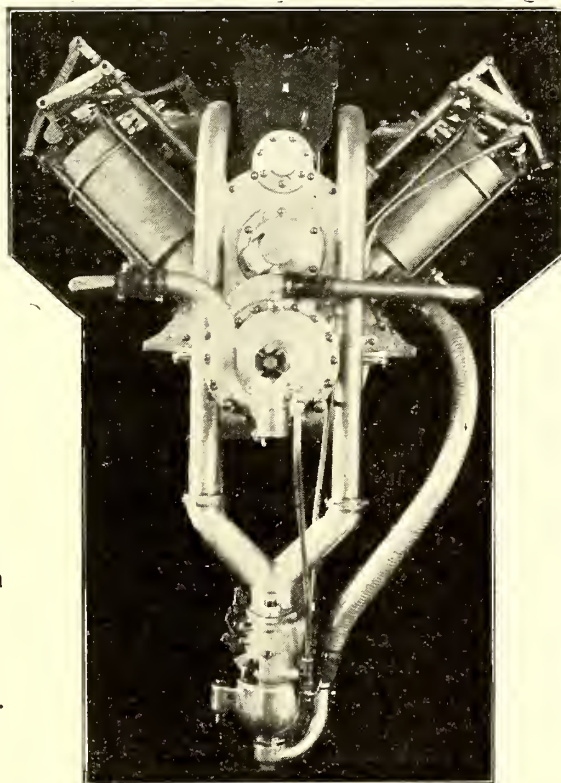
These are only minor details, it is true, but if even they were carried out effectually several aeroplanes per week could be added to the total output, and, let it be remembered, that the presence of one single new aeroplane may mean not merely saving the lives of a pilot and an observer who would have been killed if compelled to fly the mechanically fatigued machine which it would have replaced, but may mean saving a battalion, or even an army corps, owing to that observer getting safely home with information which he would never have acquired on a less efficient machine, or

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which would have been lost when he was shot down.

It seems almost impossible to make the English mind see the imminent urgency of every detail in armament work, or to make it realise that five

minutes' delay in delivering an aeroplane or a shell, or that a badly cut thread on a screw, or that a nut insufficiently locked, may cost hundreds of lives and millions of pounds.

## On Suggested Details of Organisation.

### Concerning Small Workshops.

If ever Mr. Lloyd George's new department takes an active part in organising the aircraft industry, the following suggestions may be found of some value, or may themselves suggest other points, and as such they are commended to the consideration of the authorities.

Firstly and foremostly, we are not using our small workshops to anything like the best advantage. All over England, and particularly in the London area, there are hundreds of small general engineering firms, or metal-working shops, where aeroplane parts could be made.

I know personally of one such shop whose owner has tried over and over again to get Government work and has been refused because his maximum output of a particular article has been perhaps 500 a week where the War Office wanted 5,000 and could not be bothered with handling his small output. Yet such machinery as he owns is very good, his workmen are skilled artisans, and he is a very capable manager himself.

Some lives have been lost every week because his paltry 500 component parts of some bigger jobs were not there, but no one seems to realise that in ten weeks he would have made the 5,000 parts now required from a bigger firm, and that the supplies of that particular item of ammunition would then be a week to the good. Nor does anyone seem to see that ten such small shops would turn out every week as much as one big shop.

### Supplies of Fittings.

Now, the right way to tackle such a problem is this. Take, for example, sheet-steel fittings for aeroplanes of certain standard type. Let the Admiralty, or the War Office, or the Munitions Department, if it likes, take a small warehouse in London, and put in charge thereof an engineer with experience of aircraft building, and give him commissioned rank—either R.N.V.R. or Royal Engineer Services, or something of that sort—just to impress the people with whom he is dealing. Let him find ten, or a dozen, or more small firms, and let him run that group.

He must lay out for each firm its work for the week, and must supply to that firm from his warehouse the raw material for the work. That raw material must be supplied to him direct from the steel makers—Firth, Vickers, Flather, Kayser-Ellison, and so forth—*on his own order*; all Admiralty and War Office red tape, of the kind illustrated last week, must be cut out, and this officer must run his show as if he were the manager of a firm responsible only to his directors, in his case the Director of the Air Department or the Director of Military Aeronautics.

He must have a supply of ready cash with which to pay each small workshop every Friday night for the goods delivered the previous Tuesday. The small workshop owner must take away on the Tuesday fresh raw material for the week's work after he has delivered the made-up stuff.

The made-up stuff must be fetched from the warehouse by the aeroplane firms to whom it has been allotted by a central "stores" department (Admiralty or War Office, as the case may be), which "stores" department must be simply a "clearing-house" for paper vouchers, and must not touch the material itself. It must also keep the records of the weekly balances of each of these warehouses.

These "stores" departments must be staffed and managed by men from the "despatch" departments at Selfridge's, Harrod's, the Army and Navy Stores,

and so forth, who are used to handling and collating vouchers and dockets. They will see that the stores-clerks under the engineers in charge of warehouses keep their tallies correctly. The warehouse manager himself must be an engineer, for he has to act as overseer and inspector of workshops, and he has to judge the quality of the work done and material issued. I can myself lay my hand on two or three men at least at present in the Services who would be ideal men at such work and who are simply wasting their time and their very considerable ability in their present jobs.

There is nothing really novel in this scheme, because it has all been done for centuries past in the Irish linen trade, in the Yorkshire woollen trade, in the Coventry watch trade, and in the Birmingham gun trade, among others; but it has never been done in the Services, partly because it is much too simple, but chiefly because it means that trust has to be placed in a mere engineer who is not an executive officer. Perhaps, as this is an "engineer's war," it may help to raise the status of such common folk as officers of the A.S.C. (mechanical transport) and engineer officers, R.N.

### A Natural Sequence.

From the fact that it is possible to get all sorts of parts made outside by small firms, it follows in natural sequence that it is folly for any aeroplane firm to attempt to make all its own parts, especially its metal parts.

It is curious, however, that, while it is possible to get any quantity of woodwork done by outside firms, that is just the work that most aeroplane firms prefer to do themselves, for the good and sufficient reason that ordinary carpenters and cabinetmakers have not the slightest idea of using timber as an aeroplane builder uses it. A piece of wood which a cabinetmaker would love because of its pretty curly decorative grain would give an aeroplane hand hysterics because of its obvious brittleness, and that is why an experienced woodworker of the ordinary sort cannot be trusted to touch aeroplane work till he has been born again with the eye of a different faith.

Nevertheless, small wood-working shops can do a lot of work for big firms if they are placed under the supervision of experienced aeroplane woodworkers detailed for the work from aircraft factories, and to this extent they can be made to help output considerably.

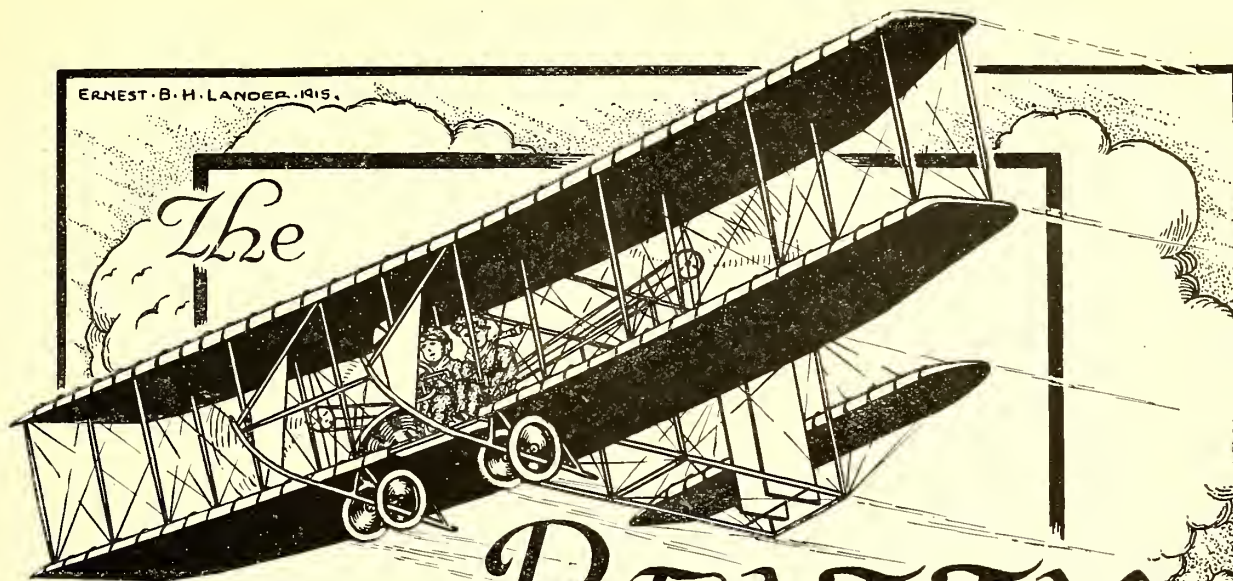
By getting practically all the metal and wood work done outside, in the way indicated, the main workshops of the big aeroplane firms can be turned almost entirely into erecting shops, and, as erecting is the most highly specialised work of all, that must be done for the present by the firm's own men.

### A Safeguard.

Every effort should be made by the firms to train new erectors, and to run subsidiary erecting shops away from their main buildings, for an aircraft raid or a perfectly spontaneous fire which destroyed any one firm's erecting shop at present would be a very serious matter, therefore the more this work is spread about the better.

As a corollary to this, one sees the wisdom of having the "proprietary" aeroplanes which have proved their value, such as Avro, Farman, Short, Sopwith, and Vickers two-seaters, and the Bristol, Martinsyde, and Sopwith tabloids, made by sub-contractors, or by firms contracting direct with the Government, which pays a royalty to the original designers. This is now being done to a very considerable extent, in just the way





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2. How many certificates have been gained during this time ?

¶ The latter question is of great importance to you ; do not be satisfied by the smooth talk of secretaries and managers, but go to the Royal Aero Club, 166, Piccadilly, W., and ask to see the register giving the number of certificates gained at the school you contemplate joining and compare it with other schools.

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so strongly advocated in this paper very early in the war.

At that time sundry objections were raised, such as that it was unfair to make a firm which had bought its knowledge by years of hard work hand over that knowledge to a new competitor. I pointed out to one such objector that, if I were a big engineering firm and wanted to build aeroplanes, I would simply go and buy his chief designer and his works manager by paying them £1,000 a year each for two or three years, because, although he could get along well enough without them, and could replace them with men at £4 or £5 a week, their knowledge would be worth the £6,000 at least to me. I also told him that, if the Government wanted machines of his type, all they had to do was to turn over a couple of those already in their possession to any good engineering firm to be dissected and copied.

However, what the Government has done in several cases is to arrange to pay the original designers a handsome royalty on each machine built to drawings supplied by them. I would go further than that, and would insist on at least one good man, either a foreman or a leading hand, being sent from the original designer's works to the new firm to see that their work is being done in the proper style and to put them up to any little hints and tips about the system of production which will accelerate deliveries.

In fact, except for the royalties to the original makers, "proprietaryism" should be stopped, seeing that "all are for the State," and every workman should be regarded as a soldier for home defence purposes, so that intelligent bench-hands in the older works may be promoted to foremen and charge-hands in the newer shops with Government approval, and without any of this nonsense about tying a man down to employment within ten miles of his own residence—of which more later.

#### **Details Which Delay.**

Quite a good deal could be done to accelerate deliveries by eliminating detail work which causes delay. Naturally, each designer has his own ideas

about what is essential and what is not essential in his own designs, and the best designers have their own particular fads and faults. Therefore, I would suggest that a small committee of designers should be formed to inspect such aeroplanes as are adopted by the Services, and see what details can be cut out with advantage.

Among my personal friends there are certain clever, if not invariably successful, designers and constructors who have a positive genius for "crabbing" other people's work, and it must be confessed that in a very large number of cases their destructive criticism is right. I am perfectly sure that if three or four of those men were turned on to "vet" other makers' designs they would suggest alterations which would save days and even weeks in the delivery of each machine.

Even as it is, two or three well-known makers invite their rivals to "come and crab" their designs, and find it immensely to their advantage. The system should be extended with official approval.

#### **A Case in Point.**

As a minor example of the kind of detail which delays deliveries, I may mention the petrol gauge which is fitted to a certain machine of Government design. This gauge has a float in the tank which operates a hand on a dial on the pilot's instrument board several feet away by means of fine silk threads. It takes a full day to fix up the connections between the tank and the dial, and if the thread breaks it takes more. As a general rule the thread breaks before the machine has been on active service a week and is never repaired, and it would be hard to find a single pilot who has really found the gauge of positive value on service. Deliveries of the gauges are slow, and machines are held up sometimes for weeks waiting for gauges which are of no real use when fitted.

All the time spent in waiting for gauges and fitting them could be saved by using an ordinary gauge glass on the gravity tank in front of the passenger and letting him signal to the pilot when it is necessary to pump up more petrol from the main tank.

## **On Organising Supplies.**

The lack of organisation in the supply of materials is another matter which needs attention. Every firm is, of course, grabbing what it can get from makers of parts and of raw material, with the result that one firm manages to get hold of a lot of stuff of one kind, and probably cannot use it because it cannot get some other stuff which has been grabbed by a rival.

For instance, one firm may secure a lot of copper sheet for tanks and the finished tanks may be held up for lack of petrol taps, while another firm may have grabbed many petrol taps which it cannot use for lack of tanks into which to fit them. Or one firm may have secured a big delivery of steel sheet for what are commonly known as "tin-clips," and be unable to complete them for lack of nuts and bolts, or rivets, while another firm has cornered the nuts and bolts and rivets, and cannot use them for lack of sheet-steel.

#### **Where "The Aeroplane" May Help.**

There seems room here for co-operation between the firms, and if any makers care to use this paper as a means of communication with other firms its columns are freely at their disposal. If a firm writes, say, "We require nuts to match bolts of the following sizes," other makers will see the need and may supply the nuts and offer to buy some of the bolts. Petrol taps may be "swopped" for sheet copper, and so on, in the same way. In fact, a kind of "Exchange and Mart" column might become a regular feature of the paper if the manufacturers care to turn the opportunity to account. Naturally, no charge would be made for the

space, as the paper's reward would lie in knowing it was doing something practical to accelerate output.

I shall be glad to hear from managers and works foremen of aircraft firms on this matter as to whether and how we can help them. *THE AEROPLANE* has for a long time been recognised in the Industry as a kind of Clearing House for general information on everything to do with aeronautics, and I should like to see it become of direct practical use in the way suggested.

#### **The Need for Square Dealing.**

Naturally, the success of any such scheme depends on firms playing the straight game with one another. There must be honest, straightforward co-operation for the common good. There must be no attempt at "hot-stuffing," as in a case I came across recently. The head of a certain firm managed to obtain through his personal influence the British rights for a highly efficient French engine, and, in order to accelerate its construction he arranged for it to be built by another firm located somewhere in West London, reserving to his own firm the rights to first deliveries. Everything seemed to be fixed up satisfactorily, and final arrangements were left to the honour of the secondary "concessionaire." Then, after a period when it seemed time to talk about deliveries in the near future it was discovered that the West London gentleman had gone behind the original concessionaire's back after securing the sole rights in his own name, and had sold engines (on paper) and had promised deliveries to other people in direct contradiction of his understand-

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ing with the man to whom he owed the privilege of coming in on a very paying proposition. If underhand dealing of this kind is to go on, of course any scheme of co-operation and mutual help is quite impossible.

#### **The Supply of Labour.**

The supply of labour is as serious a matter in the aircraft industry as it is in other branches of munitions supply, and here, again, this paper may be able to help. For years past letters have been received practically every day from men who wanted to get into the aeroplane business; but, unfortunately, that business has been so small that there has been little room for them. Now, however, the demand for men is great, and opportunities of a job are frequent.

Probably by this time most of the writers of those letters have joined one or other of the Services, but there must be many thousands left who are not eligible for military service and are still anxious to build aeroplanes. I would ask all such to communicate with me at once, addressing *THE AEROPLANE*, 166, Piccadilly, W., and marking their envelopes, "Aircraft Work."

Plenty of men, who are by nature and inclination mechanics, are condemned by an unkind fate and misguided parents to work at a desk or behind a counter. Someone has thought for them that it is more "classy" to earn 25s. or 30s. a week in a black coat than £5 to £6 a week in shirt-sleeves or a boiler suit. Yet nature will have its way, and there are thousands of men who are clean all day who make themselves happily grubby as amateur mechanics in the evening. There are others also who love mechanical things but have not had the time or money to be even amateur mechanics. All those are the men from whom I want to hear. If they are sportsmen enough to throw up "boiled shirt" jobs and enlist in the Industrial Army, I can find work in the aircraft industry for such of them as show intelligence, and they will then have a sporting chance, if they are made of the right stuff, of rising to good positions in what will some day be one of the greatest industries in the world.

Those who are only prepared to give part of their time to "munitions" production should also communicate with me, marking their envelopes, "Part Time," as it seems possible to find plenty of work for them.

All classes should note that unless their letters are properly addressed they will go straight into the waste-paper basket, for if a man has not enough gumption to follow plain instructions he will certainly be worse than useless in a workshop.

Applicants should state their age, present occupation, and experience, if any, of mechanical work. If no replies are received it will be because those dealing with the applications have too much to do.

#### **Mr. Lloyd George on Aircraft.**

On June 12th the Minister of Munitions paid a visit of encouragement to Bristol. On arriving at Stapleton-road Station, Mr. Lloyd George, who was accompanied by Sir Percy Girouard, was received by the Lord Mayor of Bristol (Alderman J. Swaish), Sir George White, Chairman of the British and Colonial Aeroplane Company, Ltd., and Mr. Horace Walker, an active member of the Recruiting Committee. The Minister of Munitions attended a meeting of the Munitions Committee, and conferred with the members in private.

Subsequently, accompanied by Sir George White, the right hon. gentleman paid a visit to the Bristol Aeroplane works at Filton. A guard of honour of the Army Service Corps was drawn up outside the works, and at a signal the factory hands came out and surrounded the Minister.

Mr. Lloyd George said: "I wish to thank you on behalf of the Government for the excellent work you are doing for the country. There is no more important work than that which you are doing. As I was telling the Committee in Bristol, you will find in Europe no finer airmen than the British aviators—(cheers)—but we want more aeroplanes. The Germans

#### **The Industrial Army.**

Some time ago, Lord Derby enlisted a couple of battalions of dock labourers for the King's Liverpool Regiment, and they were set to work in uniform at the Docks. Now one hears that Mr. F. C. Pullinger, of the Arrol-Johnstone Co.—who make Beardmore-Daimler aero engines and other aircraft parts—has put his men into uniform also. It is a thoroughly sound idea, and should be extended to all who are producing munitions of any kind.

Aircraft workers at home are defending the country as much as the men of the R.F.C. abroad—provided always that they really work, and do their utmost all the time, and do not strike under any provocation. Therefore, they should be in uniform. Also they should be under proper discipline, and the chargehands, shop foremen, etc., should be N.C.O.s, with some disciplinary powers to deal with shirkers.

If the whole thing were properly organised the good men would quickly gain promotion, for if a good man could not be promoted in his own shop it should be the duty of a properly appointed inspector of factories to find an N.C.O.'s job for that man in another shop where a foreman or charge-hand was needed. It might seem hard for a works manager who prided himself on the high class of his workmen to have his best men sent to other shops, but if he considered that the work he had himself done in training that man to be efficient had resulted in increasing the output or the quality of work at another factory to the ultimate advantage of the Royal Flying Corps, and thereby of the British Army, he would feel well rewarded. And, anyhow, it would be an improvement on the present method under which a man becomes bored because he is not made a foreman, and leaves in disgust, and hangs round for two or three weeks or months looking for a job which is good enough for him, so that his output of work during that period is wasted.

The whole system of the Industrial Army can be improved by placing it on a military basis, but to be a success it must have the right men in charge. The "hereditary dud," as a correspondent calls the run-to-seed aristocrat, must be kept out of it as severely as the "walking delegate," the grafting agitator, and the canteen-sergeant type.

This article is phenomenally long, but it only touches the fringe of the questions of Industrial Organisation and Output of Munitions, so I hope others interested in these vital subjects will think over the points dealt with herein, and will let me have their views on the various ideas. It is quite possible that suggestions of real value may find their way to places where they will be put to practical use.—C. G. G.

have many more aeroplanes than we have. One British aviator goes as far as about two or three Germans—(cheers)—but at the same time we want more aeroplanes, and I am so glad to see you working at them here, and working so well and so skilfully.

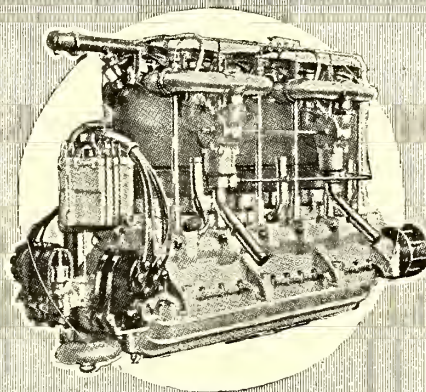
"This is the first time I have visited a factory of the kind, and I have been extraordinarily interested in seeing the work you are doing. I am exceedingly obliged to you, and on behalf of the Government I thank you. The more of these machines you can turn out the better it will be for our brave fellows in France. (Cheers.)

"It is the only way in which we can detect the hidden gun emplacements of the enemy. Our splendid aviators and observers find out exactly where the trenches and guns are, and then our artillery gets to work, and when they have smashed away defences our infantry will turn the Germans out of the trenches; but your job is the first." (Cheers.)

Several aeroplanes from Salisbury Plain flew over and performed for a time in the presence of the right hon. gentleman. Mr. Lloyd George then returned to Bristol, where he was the guest of the Lord Mayor at lunch in the Royal Hotel.



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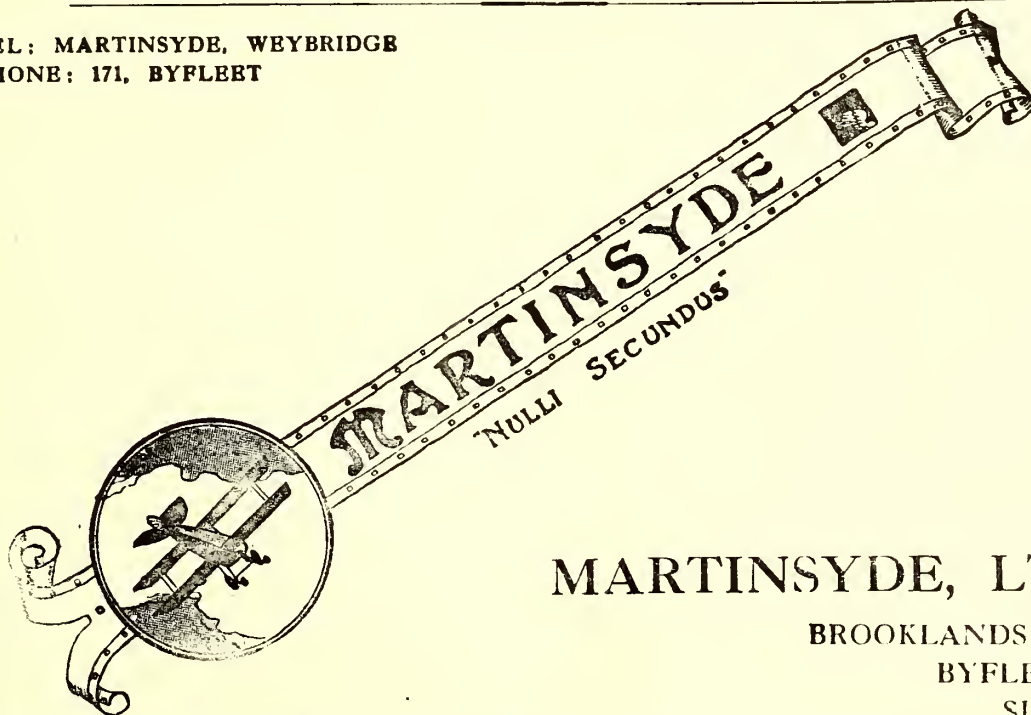
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## Naval and Military Aeronautics.

### GREAT BRITAIN.

From the "London Gazette," June 8th, 1915.

WAR OFFICE, JUNE 8TH.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieuts. (on prob.) confirmed in rank: M. E. Lane, O. D. Filley, E. A. E. Wood.

To be sec. lieuts. (on prob.): R. G. Gould. May 7th. S. A. Hebden. May 17th. H. R. Johnson. May 22nd. R. G. Bennett. June 1st.

\* \* \*

From the "London Gazette," June 9th, 1915.

WAR OFFICE, JUNE 9TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Wing. Com.—Major T. I. Webb-Bowen, Beds., from sqdn. com., and to be temp. lieutenant-col., vice Bt. Maj. (temp. Lieut.-Col.) H. R. M. Brooke-Popham, Ox. and Bucks L.I. May 27th.

Flying Officers.—May 22nd: Sec. Lieut. A. C. Clarke, 3rd D.C.L.I., and seconded; Sec. Lieut. H. M. Goode, 2nd Co. of Lon. Yeo., T.F.; Sec. Lieut. O. D. Filley, S.R.; Sec. Lieut. M. E. Lane, S.R.

\* \* \*

From the "London Gazette," June 10th, 1915.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—The following appointments are made:—

Military Wing.—Flight Commr.—Major C. Mellor, R.E., from a Gen. Staff Officer, 3rd Grade, at the War Office (May 25th).

Central Flying School.—Instructor.—Lt. (temp. Capt.) E. L. Conran, 21st Lancers, from a Flight Commr., and to retain his temp. rank whilst so employed, vice Capt. F. F. Waldron, 19th Hussars (June 1st).

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. lieuts. (on prob.) confirmed in rank: C. F. Collett, S. W. Caws. To be sec. lieuts. (on prob.): A. T. Whitelock. May 22nd. G. E. H. Fincham. May 24th. H. S. Ward. May 25th. E. I. Bingham. June 1st.

\* \* \*

From the "London Gazette," June 11th, 1915.

WAR OFFICE, JUNE 11TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Sqdn. Com.—Capt. F. F. Waldron, 19th Hrs., from an instr., Central Flying School, and to be temp. maj. whilst so employed. June 1st.

Wing Adjutant.—Capt. B. C. Fellows, ret. pay, I.A. May 17th.

\* \* \*

From the "London Gazette," June 12th, 1915.

WAR OFFICE, JUNE 12TH.

GENERAL STAFF OFFICERS.—1st Grade.—May 26th: Bt. Maj. (temp. Lieut.-Col.) H. R. M. Brooke-Popham, Ox. and Bucks L.I., from wing com., Royal Flying Corps, and to retain temp. rank, vice Bt. Lieut.-Col. F. H. Sykes, 15th Hrs.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Wing Com. (Supery.)—Bt. Lieut.-Col. F. H. Sykes, 15th Hrs., from Gen. Staff officer, 1st grade. May 26th.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. lieuts. (on prob.) confirmed in rank: H. K. Maxwell, S. A. Hebden, G. S. Peacock, C. Barber.

To be sec. lieuts. (on prob.): S. T. Welch. May 26th. G. Forbes. May 28th. June 1st: W. H. T. Rampling-Rose, H. A. Oxenham, S. E. Neal.

\* \* \*

From the "London Gazette," June 14th, 1915.

WAR OFFICE, JUNE 14TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers—May 31st: Sec.

Lieut. C. O. Fairbairn, 3rd Loyal N. Lanes., and seconded; Sec. Lieut. L. F. Page, S.R.

Equmt. Officers—Maj. S. E. Smith, 6th Glos., T.F. May 21st. Temp. Lieut. C. D. M. Campbell, and to be temp. capt. May 26th.

Asst. Equmt. Officers—Sec. Lieut. M. Spicer, Northants, and seconded. April 10. Sec. Lieut. E. A. E. Wood, S.R. May 25th. Sec. Lieut. H. K. Maxwell, S.R. May 28th. Capt. R. C. Donaldson-Hudson, T.F.R. May 29th. May 31st: Sec. Lieut. A. B. Rendall, S.R.; Sec. Lieut. G. S. Peacock, S.R.; Sec. Lieut. C. Barber, S.R.; Sec. Lieut. S. A. Hebden, S.R.

### NAVAL.

The following appointments were notified at the Admiralty on June 8th:—

ROYAL NAVAL AIR SERVICE.—The following have been granted temporary commissions as lieutenants, R.N.V.R., and appointed to the "President," additional, for R.N.A.S., to date May 31st: P. E. Doherty, A. E. Gelder, V. C. H. Longstaffe, and F. H. Taylor.

\* \* \*

The following appointments were notified at the Admiralty on June 9th:—

ROYAL NAVAL AIR SERVICE.—Messrs. C. W. Gamble and P. L. H. Dodson granted temporary commissions as lieutenants, R.N.V.R., to date June 8th and June 3rd respectively.

Messrs. H. M. Beddall and J. D. Greenwood granted temporary commissions as sub-lieutenants, to date June 8th.

The undermentioned have been entered as probationary flight sub-lieutenants, to date as mentioned: B. C. Clayton, R. Douglas, and W. Perham, June 14th; H. G. R. Malet, June 12th.

The following have been entered as probationary flight sub-lieutenants for temporary service, to date as mentioned: H. S. Bompas, May 8th; W. L. E. Childers, H. E. C. Plowden, T. F. Morris, and J. Wann, June 8th; J. H. D. Grant, June 1st.

\* \* \*

The following appointments were notified at the Admiralty on June 10th:—

ROYAL NAVAL AIR SERVICE.—Mr. E. S. McDonald granted a temporary commission as lieutenant, R.N.V.R., and appointed to the "President," additional, for R.N.A.S., to date June 9th.

The undermentioned have been granted temporary commissions as sub-lieutenants, R.N.V.R., and appointed to the "President" for R.N.A.S., to date as stated: R. R. Alexander, June 9th, and C. M. Kirkwood, A. R. Courtenay, and R. E. Danton (armoured cars), May 25th.

Flight Lieut. Temp. H. R. Busted transferred to permanent list, R.N.A.S., from June 7th.

Temp. Sub-Lieut. A. C. Wade, to the "President," additional, for R.N.A.S., to date June 9th.

\* \* \*

The following appointments were notified at the Admiralty on June 12th:—

ROYAL NAVAL AIR SERVICE.—Mr. A. Landells granted a temp. commission as lieut., R.N.V.R., and appointed to the "President," additional, for duty with R.N.A.S., to date June 5th.

Messrs. F. E. Barrington, W. H. Oakey, and I. H. W. Barnato entered as prob. flight sub-lieuts., for temp. service, and appointed to the "President," additional, for R.N.A.S., to date June 13th.

The Hon. M. Towneley-Bertie transferred from Military Wing to R.N.A.S., as temp. flight sub-lieut., and appointed to the "President," additional, for R.N.A.S., to date June 4th.

\* \* \*

The following appointments were notified at the Admiralty on June 14th:—

ROYAL NAVAL AIR SERVICE.—Messrs. A. E. Hawker and H. G. Brackley entered as probationary flight sub-lieuts.,

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for temporary service, and appointed to the "President," additional, for R.N.A.S., to date June 13th.

Temp. Sub-Lieut., R.N.V.R., L. T. Day's temporary commission and appointment terminated in order to take up a temporary commission in the Regular Army, to date June 12th.

Temp. Maj., R.M., P. W. North granted a temporary commission as lieutenant-commander R.N.V.R., and appointed to the "President," additional, for duty with the R.N.A.S. (armoured cars), to date June 11th.

\* \* \*

The circumstances in which the King has been graciously pleased to approve of the grant of the Victoria Cross to Flight Sub-Lieutenant Reginald Alexander John Warneford, Royal Naval Air Service, are set forth in the "London Gazette" of June 11th as follows:—

For most conspicuous bravery on the 7th June, 1915, when he attacked and, single-handed, completely destroyed a Zeppelin in mid-air. This brilliant achievement was accomplished after chasing the Zeppelin from the coast of Flanders to Ghent, where he succeeded in dropping his bombs on to it from a height of only one or two hundred feet. One of these bombs caused a terrific explosion, which set the Zeppelin on fire from end to end, but at the same time overturned his aeroplane and stopped the engine. In spite of this he succeeded in landing safely in hostile country, and after fifteen minutes started his engine and returned to his base without damage.

\* \* \*

The Secretary of the Admiralty announces the following casualty under date June 7th in connection with the Mediterranean Expeditionary Force:—

R.N. DIVISION, "ANSON" BATTALION.

KILLED.

Lieutenant John C. Spencer-Warwick, R.N.V.R.

\* \* \*

The following appeared in the obituary columns on June 12th:—

SPENCER-WARWICK.—Killed in action, on June 7th, at the Dardanelles, Lieut. John Charles Spencer-Warwick, Anson Batt., R.N. Division, born June 9th, 1891, son of Major C. S. Warwick and Mrs. Warwick, and grandson of Charles H. Berners, of Woolverstone Park, Ipswich.

J. C. Spencer-Warwick was born on June 9th, 1891, at Rangoon, and was educated as a naval architect. He was for many years an officer of the R.N.V.R. and was a keen sailor, taking every opportunity that offered of doing sea service. He became deeply interested in flying in its early days, and in 1913 was able for the first time to fulfil his wish to fly. He joined the Vickers School at Brooklands, and took his certificate there on February 26th, 1914, the certificate being

No. 745. He showed considerable promise as a pilot, but never succeeded in obtaining a commission in the R.N.A.S. It is the irony of fate that a man with his experience of sea and air should have met his death as an infantry officer.

\* \* \*

The Secretary of the Admiralty announced on June 9th the following casualty in France:—

SUFFERING FROM GAS POISONING, MAY 24TH.—Richards, Capt. Francis S., R.M.A., Anti-Aircraft Brigade.

\* \* \*

The Secretary of the Admiralty announced on June 11th the following casualty under date May 31st:—

KILLED.

Flight Lieut. Herbert G. Wanklyn, Royal Naval Air Service.

\* \* \*

The following appeared in the obituary columns on June 9th:—

WANKLYN.—On 31st ult., whilst flying on seaplane on patrol duty, Flight-Lieutenant H. G. Wanklyn, R.N., aged nineteen, dearly loved elder son of Mr. and Mrs. H. A. Wanklyn, 10, Marlborough Mansions, Finchley Road, London, N.W.

Herbert Graham Wanklyn was born in London on August 3rd, 1895, and took his certificate, No. 824, on 1 Maurice Farman at the Central Flying School, Upavon, on June 24th, 1914. He was appointed to the R.N.A.S. at the outbreak of war, and was recently given his second stripe. He was a capable pilot, and a most promising young officer, who will be deeply regretted.

#### MILITARY.

The Field-Marshal commanding the British Forces in France reported as follows on June 8th:—

3. We have brought down two German aeroplanes, one opposite our right, by gunfire, and the other in the neighbourhood of Ypres, as the result of an engagement in the air with one of our aeroplanes.

\* \* \*

The following passage in the descriptive account communicated by an Eye-Witness present with General Headquarters, continuing and supplementing the narrative published on June 7th, deals with aircraft:—

June 8th, 1915.

On . . . Thursday, the 3rd, . . . during the day our anti-aircraft guns scored a hit on a hostile aeroplane, which came down close behind the German front line.

\* \* \*

The following passage in the descriptive account communicated by an Eye-Witness present with General Headquarters, continuing and supplementing the narrative published on June 9th, deals with aircraft:—



One of the new Thomas Tractor Biplanes (90-h.p. Curtiss En gine) starting for a test flight.

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June 12th.

The period of stagnation in operations lasted from Monday, June 7th, to Thursday, June 10th inclusive, no action of any importance being undertaken by either side. On Monday, the day upon which our naval airmen obtained such a striking success, two of their comrades in the Royal Flying Corps had a most adventurous flight.

Whilst on reconnaissance about twenty miles from our front they were attacked by several German aviators. It was not long before our pilot was shot through the jaw and neck. At first he collapsed and lost control of the aeroplane, and then recovered sufficiently to steady the machine, which continued its flight pursued and fired at by a succession of hostile aeroplanes. Nevertheless he gradually grew weaker and weaker through loss of blood and became hardly conscious of what he was doing, but the observer handed him bandages and helped him to bind up the wound, which was a dangerous one, while he kept the machine going, maintained observation, and completed the reconnaissance.

The pair of officers made a good landing at their base, having returned with the information which they had been sent out to collect. The pilot is doing as well as can be expected from the nature of his wound.

[The narrative evidently refers to Capt. A. E. Borton, reported wounded under date June 8th. This officer's very gallant action is very similar in quality to those for which Squadron-Commander Davies, R.N. received his D.S.O., and for which the late Mr. Moorhouse was given a V.C., and for which the late Captain Fox was not. In the two last-named cases the officers were wounded on their return from their mission and struggled home to die. In this case and in that of Squad.-Comm. Davies the officers were wounded on their way to their objective but kept on and completed their work before returning.—Ed.]

\* \* \*

The following appeared in the Casualty List published on June 8th:—

PREVIOUSLY OFFICIALLY REPORTED MISSING, NOW UNOFFICIALLY REPORTED PRISONER OF WAR.

Crosbie, Capt. D. S. K., Argyll and Sutherland Highlanders and Royal Flying Corps.

\* \* \*

The following appeared in the Casualty List published on June 9th:—

WOUNDED.

Richard, Lieut. L. F., Royal Garrison Artillery and Royal Flying Corps.

Wells-Bladen, Lieut. L. M., Royal Flying Corps.

\* \* \*

The Casualty List published on June 10th contains the following under date June 4th:—

MISSING.

Gaye, Capt. A. D., 1st Bedfordshire Regiment, att'd. Royal Flying Corps.

Prichard, Capt. F. H., Royal Garrison Artillery, att'd. Royal Flying Corps.

\* \* \*

The following appeared in the Casualty List published on June 12th, under date June 6th:—

OFFICIALLY REPORTED INTERNED IN HOLLAND.

Hodgson, Lieut. E. E., Royal Flying Corps.

Morrell, Lieut. C. M., 9th Royal Munster Fusiliers, att'd. Royal Flying Corps.

\* \* \*

The following appeared in the Casualty List issued on June 14th, under date June 8th:—

WOUNDED.

Capt. A. E. Borton, Royal Flying Corps.

PREVIOUSLY OFFICIALLY REPORTED MISSING, NOW UNOFFICIALLY REPORTED INTERNED IN HOLLAND.

Capt. F. H. Prichard, Royal Garrison Artillery and Royal Flying Corps.

\* \* \*

The "Court Circular" of June 8th notifies that Major G. S.

Shephard, Royal Flying Corps, had the honour of being received by the King at Buckingham Palace on that day, when his Majesty decorated him with the Military Cross.

\* \* \*

The following appeared in the wedding announcements of June 12th:—

DISNEY—SUFFERN.—At St. Michael's, Southfields, S.W., at very short notice, by the Rev. A. E. D. Disney, rector of Stoney Stanton, and the Rev. A. S. W. Young, vicar of Kingston-on-Thames (godfathers of the bridegroom), Henry Anthony Patrick (Caius Coll., Camb.), Lieut. 1st Cambs. Regt., T.F., and Royal Flying Corps, elder son of H. W. Disney, barrister-at-law, Recorder of Great Grimsby, and Mrs. Disney, 8, West Hill Road, Wandsworth, S.W., to Kathleen Maude Suffern, elder daughter of Dr. and Mrs. Suffern, Rubery Hill, Birmingham.

\* \* \*

A subaltern in the British Army, who has contributed to the "English Review" several most graphic sketches of what active service really means, makes an interesting reference to aircraft in his description of the incidents connected with capture of Neuve Chapelle published in the issue for June, 1915:—

"Again and again the squat, black howitzers, peeping from their screen of leaves, belch forth flame, jerk up their heads, and are immediately surrounded by their little crowd of attendant gunners. Ceaselessly overhead the aeroplanes, English and French, pass to and fro. Suddenly, without warning, a wailing shriek rends the air. A 16-inch German shell coming! We look up. No! We are petrified. For one appalling second we watch an aeroplane, crumpled, disintegrating, hurtle five hundred feet through the air—fall like a stone to the ground."

"Half-an-hour later another little procession passes along the road. Two stretchers, four bearers to each, two bodies cased in leather, inconceivably torn and battered. So the two aviators, Irving and Morgan, had died. We walked along the road and there, three hundred yards away, in a rickyard, was the shapeless, twisted mass of canvas, wood, and steel that once had been an aeroplane. Hard hit by the German guns, it had flown painfully down to our lines, only to crumple up at safety's door."

"And presently, a few fields off, another aeroplane descends. This time safety has been reached by a hair's breadth. The two aviators show us their machine, smiling calmly the while. The petrol tank has a hole large enough to put your arm in. All the way from La Bassée, where the German shrapnel burst around it for half-an-hour on end, it had been leaking furiously. A narrow shave—but that is the sort of thing our aviators regard as a joke."

[It is generally understood in the R.F.C. that Mr. Morgan's machine was hit by one of our own shells while going out low down in the fog, which prevented the pilot from reaching a safe altitude before starting out from behind our guns.—Ed.]

## FRANCE.

Reuter reports that an official Note issued on June 13th says: "The Minister of War to-day handed the Cross of Chevalier of the Legion of Honour to Flight Lieut. Warneford, of the British Army. Lieut. Warneford is the officer who, while flying recently over Belgium at a great height, encountered a Zeppelin armed with machine-guns. He descended to within 60 metres of the balloon and blew it up with bombs. Lieut. Warneford's machine turned over, and he had to land, as one of his tanks had been pierced. He at once emptied the leaking tank into the second tank, and resumed his flight amid a hail of bullets from the German troops, who had run up in the meanwhile. He was on the ground 35 minutes."

[If Reuter's translation is correct it is to be hoped that the French official information of young Mr. Warneford's adventure is more accurate than the French official information concerning his rank and service.—Ed.]

\* \* \*

It is reported that the Paris Municipal Council has decided that a prize of £200, and a gold medal, will be offered in the name of the city of Paris to every aviator who may bring down

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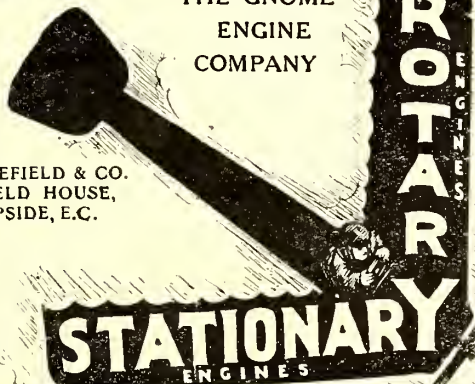
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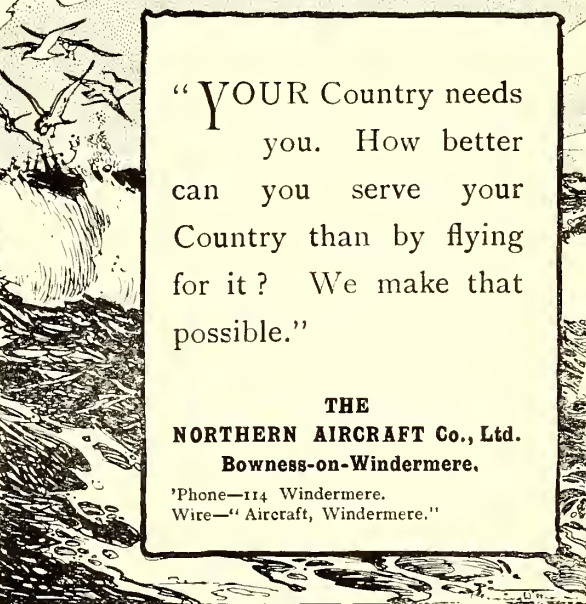
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one of the enemy aircraft flying over Paris or its suburbs. So now one may perhaps hear of something being done by the escadrille of embusqués.

\* \* \*

A report from Paris on Monday, June 14th, says that a French aeroplane had reconnoitred the enemy's artillery positions. The Germans sent up an Aviatik to give chase. The French machine gaining the greater altitude, the hunter became the hunted, and the Aviatik was soon in full flight. The motor of the French aeroplane then stopped, and the machine came down so sharply into a field that the German aviator, believing his enemy killed, descended near at hand. The French pilot, pretending to be dead, allowed the German to approach and then shot him, after which he made a rush for the Aviatik, killed the passenger, and, starting the motor, flew back to the French lines, while his observer followed him with his own machine.—[A very good story, but needing confirmation. It is hardly likely that so near the fighting line the little episode on the ground would be without a military audience.—Ed.]

#### GERMANY.

The communiqué of June 8th says:—

Near Douai an enemy aeroplane was shot down.

In the Eastern war theatre . . . South-west of Plock an enemy aeroplane was forced to descend and was captured.

Apparently the German newspapers have not been allowed to publish the destruction of the Zeppelin by a naval aviator, so the comment of the "Vossische Zeitung" on the destruction by an Austrian of the Italian "Citta di Ferrara" is somewhat unfortunate. The paper says: "Our airships on their flights to England and their attacks on Calais, Paris, and other French towns have been repeatedly attacked by the aeroplanes of our adversaries, but neither the English nor the French have succeeded in destroying one of our Zeppelins, which easily shook off hostile aviators and safely reached port. For the first time an Austrian aviator has succeeded in bringing down an airship. The 'Citta di Ferrara,' though one of the latest Italian airships, does not attain the speed of the German Zeppelins."

\* \* \*

The "Frankfurter Zeitung" of June 11th gives the British account of the attack on the airship shed at Evere and the sinking of the Zeppelin, but adds that no German official confirmation has yet been received.

#### AUSTRIA.

The communiqué of June 10th says:—

In the Balkans one of our air squadrons early yesterday morning successfully bombarded the arsenal and explosives factory at Kragujevac, causing two fires. Our aviators returned safely.

\* \* \*

A Vienna official telegram received in Amsterdam and dated June 8th says:—

The naval command states that the hostile airship "Citta di Ferrara" while returning from Fiume at 6 a.m. this day was shot at and destroyed by the naval aeroplane "L 48"—Pilot Naval Lieut. Giasing and Observer Naval Cadet Von Fritsch—south-west of Lussin. The two officers and five men of the airship crew were captured.

\* \* \*

A telegram from Vienna via Amsterdam, dated June 8th, states that an official announcement by the naval authorities says:—

The naval aeroplane "L 47," Pilot Comm. Banfield, Observer Cadet von Strobel, this morning successfully bombarded the balloon shed at the Murano Camp, near Venice, and also an enemy destroyer, causing several fires. A machine-gun was used against troops in camp.

[It seems probable that the pilot was that young officer who, as Lieut. Banfield, accompanied Lieut. Bier on the big Etrich in the "Circuit of Britain" in 1911, and incidentally won the regard of all who met him.—Ed.]

\* \* \*

A report from Geneva states that an Austrian airship was destroyed through the force of a storm dashing it against a mountain at Adanello.

#### RUSSIA.

The communiqué of June 12th says:—

On the right bank of the Vistula, in the region of Starozemy, . . . our air squadrons made reconnaissances and dropped bombs with success, thus contributing materially to the repulse of the enemy's attack on this front.

#### ITALY.

On June 7th the Italian Admiralty made an announcement which is thus reported by Reuter:—

"Last night a fresh raid on Pola was made by our dirigible Aeronavire. It dropped several bombs, which all exploded on points of military importance."



On the left, the Sapeur-Aviateur Charles Hubert, formerly of Hendon, now of the French Aviation Service. In the centre, the Adjudants Sismanoglou, a Greek volunteer, and Noël being invested with the Medaille de l'Armée by the Chef d'Aviation of their Army Corps near Toul. On the right, the Adjudant Noël with his Croix de Guerre and Medaille de l'Armée.



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['Aeronavire' merely means "airship" and is not, as it seems, a new artistic effort in nomenclature.—Ed.]

\* \* \*

The communiqué of June 8th says:—

This morning an enemy aeroplane flew over Venice, throwing bombs, which slightly damaged a few private houses. One woman was slightly injured in the arm, and a young girl was struck on the head by a ricochet. A few bombs were also dropped at points further inland. One person was killed and a few injured.

\* \* \*

Further reports state that the Austrians threw seven bombs on Mola di Bari, two on Polignano, and nine on Monopoli. No damage appears to have been done to the main line to Brindisi, along the coast which connects these three places.

\* \* \*

The following official statement was issued in Rome on June 9th:—

Yesterday morning one of our airships flew over Fiume and dropped a number of bombs upon places of military importance. While returning the airship was obliged to alight on the water near the island of Lussin owing to engine trouble, and caught fire. It appears from a communication issued by the enemy that the crew were saved and made prisoners.

\* \* \*

It was reported from Venice on June 9th that the Italian airship which was over Fiume on the 8th bombarded the torpedo and submarine works founded by Mr. Robert Whitehead, and damaged the Danubius navy yard, where the Dreadnought "Szent Istvan" has been built. The airship also threw bombs on a factory where submarine parts from Germany were being assembled, but having remained too long saw the impossibility of reaching the Italian coast. [Just why is not explained. Though there may have been a very strong west wind.—Ed.] Being closely pursued by Austrian torpedo-boats, the Italians set the airship on fire so that it might not fall into the hands of the enemy. They then jumped into the sea, and were made prisoners.

\* \* \*

The destroyed dirigible "Città di Ferrara"—No. 2 of the M series—was a naval airship cubing about 37,000 ft., and powered by four Wolseley 120-h.p. motors driving variable pitch propellers, by which also reverse was obtained. She first took the air early in 1913, and her best overland trip was that from Ferrara to Gargano (Manfredonia) during which she travelled non-stop for 21 hours and covered 650 miles roughly. Her normal activities, however, were displayed in flights at sea, to which element fittingly she has now returned.

Only the trained observer's eye could have detected the differ-

ence between this vessel and M. 3 illustrated quite lately in THE AEROPLANE—No. 22. The latter is very slightly smaller at the maximum diameter and has trifling detail variations, e.g., in the ratios of her control surfaces.

M. 2, or the City of Ferrara, with the Parseval and P. 4, composed the dirigible section of the naval arm, and her crew had had the benefit of considerable training in combined manoeuvres with the fleet, especially by co-operating with submarine and mine-laying and sweeping operations. Her allies of those days, the Curtiss and Borel seaplanes, and many friends will lament her.

Luckily a special feature of the Italian dirigible is that very few "hands" are needed to navigate them, so that the service is temporarily bereft of only some half a dozen men.—T. S. HARVEY.

#### BELGIUM.

The "Telegraaf" (Amsterdam, June 10th) learns from Brussels that on Sunday night an aviator of the Allies flew over Brussels. The biplane came from the west, and flew over part of the city and the Josaphat Park, afterwards making for the airship shed at Helmet. Later the aviator threw bombs at Etterbeek, but did not hit the shed there, whereon he returned to Helmet amid renewed heavy gun fire, and threw three or four more bombs. This time flames and clouds of smoke were seen to rise from the shed. The aviator then disappeared to reappear at Mons, where he dropped bombs on a stable containing a number of horses.

It has since been ascertained that at Helmet a Parseval airship and part of the shed were destroyed.

Evere, where an airship shed was set on fire by Flight-Lieuts. Wilson and Mills on Monday morning, and Helmet are adjacent suburbs to the north-east of Brussels. [There is nothing to show that the three incidents mentioned in the "Telegraaf's" report relate to the same pilot, but the Helmet shed is evidently the one referred to by our people as being at Evere.—Ed.]

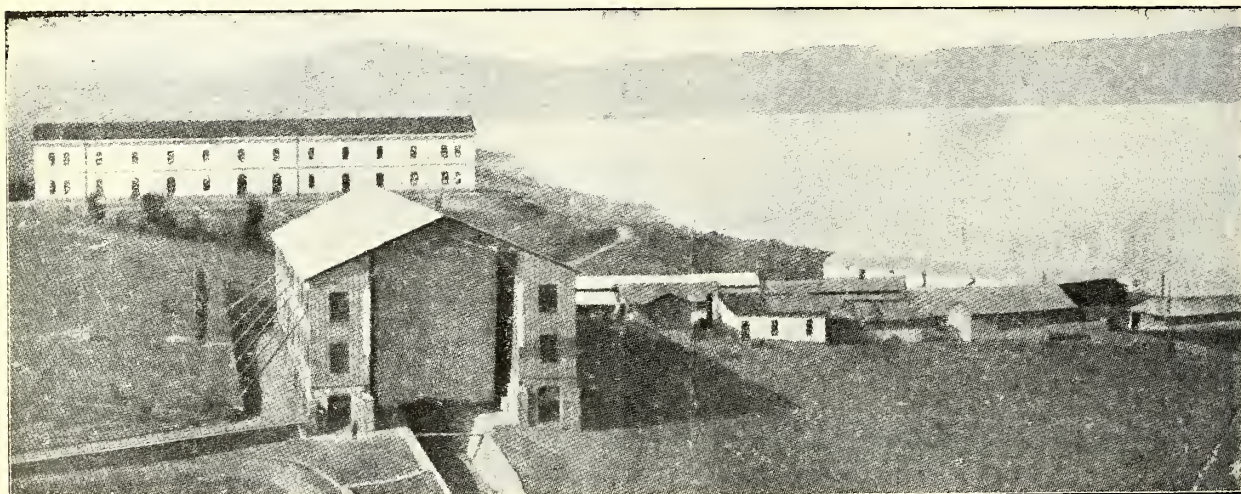
\* \* \*

Another report says that the airship which was destroyed was a Zeppelin and not a Parseval. An eye-witness relates that as soon as the British aeroplane (should it be aeroplanes?) appeared the Germans attempted to get the airship out of the shed. Considerable enthusiasm was aroused among the civilian population of the town at the failure of the German anti-aircraft guns to hit the invaders, for which many individuals were subsequently heavily fined.

The aviator, or aviators, dropped three bombs from a low altitude which quite successfully blew the airship up. It is said that five aeroplanes were destroyed in the shed as well as nineteen soldiers.

\* \* \*

According to the "Telegraaf" (Amsterdam, Monday, June



The shed where the "Città di Ferrara" was built, showing the cut-out way for the nacelle, and the quarters for officers and men.

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Telegrams—"Santochimo, London."

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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.



14th, the airship which was destroyed last Monday at Evere was the Zeppelin L Z 38.—[This seems quite probable, as the newest of all Zeppelins ought by now to be about L Z 40, and she may not be out of the builders' hands yet.—Ed.]

#### SERBIA.

A communiqué issued at Nish on June 9th says:—

Between 5.30 and 6 a.m. three enemy aeroplanes flew over Kragujevatz and dropped bombs, some of which did not explode. Three people were killed and ten wounded. Some of our aviators intercepted the enemy as they were flying back to Smederevo. A fight ensued, in which one of the enemy machines, coming under the fire of our aviators' machine-guns, was brought down. It fell in Austrian territory, but a cloud of thick smoke was seen rising from where it came to the ground.

\* \* \*

A message from Nish on June 8th states that a German aeroplane over Egri Palanka, near the new Bulgarian frontier, was brought down by motor defects. A German officer and an N.C.O., who had certain official papers on them, were arrested, and the aeroplane was seized.

An enemy aeroplane flew over Piavevz and dropped nine bombs. Several persons were injured.

#### TURKEY.

Turkish Main Headquarters reported on June 14th:—

On May 24th, an English cruiser before Moyleh, near Endina, on the Red Sea, sent up a flying machine. The aviator was shot down.

#### SOUTH-WEST AFRICA.

A reader of THE AEROPLANE in the Transvaal writes that her brother, on active service in German South-West Africa, says that some of our aeroplanes were already flying at Walfish Bay when he was there, and behaving very well.

#### U.S.A.

An American contemporary states that the Thomas Bros. Aeroplane Company have on order at the present time about £50,000 worth of aeroplanes for the Allies.

#### NOVA SCOTIA.

Advices from Halifax, Nova Scotia, under date of May 17th, state that, in addition to the sum already acknowledged, further subscriptions amounting to over 1,000 dollars have been received by the Masonic Club at Halifax on behalf of the Aircraft Fund, for the purpose of presenting an aeroplane to the Royal Flying Corps.

#### CANADA.

On Monday, May 17th, H.R.H. the Duke of Connaught inspected the MacCurdy Aviation School. (Vide the Canadian Press in general.)

\* \* \*

From the "Globe," Toronto, May 21st.—"Trials were carried out yesterday with one of the latest type of biplane, a machine capable of 85 m.p.h. The tests were made in the presence of two representatives of the British Government." One also gathers from the "Globe's" account that the tests were conducted on a local rifle range, the surface of which is very uneven and greatly needs levelling.

From the "Globe" of May 25th:—"One of the three aviation schools in Toronto has received a request from an Ottawa lady for particulars of the fees for a course of training."

This paper also says:—"Mr. Dean, accompanied by a pupil, met with a mishap on a flying-boat on his last trip. The motor-launch which usually accompanies the machine happened to be away when the flying-boat sprang a leak and the gasoline tank was empty. The water, to make matters worse, was rather rough. They succeeded in dismantling the wings and beaching the boat, none the worse for their experience."

#### STRAITS SETTLEMENTS AND F.M.S.

The following appears in the "Times of Malaya" (Weekly Mail Edition, April 29th):—A meeting of the Penang Literary Society was held in the Free School, Penang, on Tuesday, with M Isaac Tambayh in the chair. Mr. Mahomed Ariff, in speaking to an audience of over 50 on "Aircraft and the Present War," traced the history of the construction of aerial vessels and the progress made in the science of aerial navigation and explained the principles underlying such construction. The place that aircraft occupies in the present war, the oppor-

tunities afforded for the study of their better equipment, the disadvantages under which the unwieldy rigid type of aerial vessels labour, the numerical strength in aeroplanes of the belligerents, were all treated at length. The lecturer (Mr. Mahomed Ariff) concluded with the hope that the local proposal to present the Home Government with a fleet of 12 aeroplanes will meet with warm support from the F.M.S. and the Colony.

Mr. C. Alma Baker, of Batu Gajah, Kinta, F.M.S., has issued a further appeal to the people of the F.M.S. and Straits Settlements to subscribe towards an "Air Fleet Fund," with the object of presenting "the Home Government" with aeroplanes.

The following is an extract from the appeal, which is written in the form of a letter, and communicated to the local press: "I have received up to the present one aircraft from a loyal and patriotic Chinese miner in Kinta, and have received other subscriptions from Europeans and Chinese in Kinta equal to over half the cost of another aircraft, and also some subscriptions from Europeans and Patriotic Chinese of Penang. I have not so far approached any of the other centres in the Straits and the F.M.S. I sincerely hope that people living in the Straits Settlements and the F.M.S. will see as I do the possibility of giving an Eastern fleet of at least 15 B.E.2c. aircraft costing £1,300 each, a total of £21,000

"One already given by Eu Tong Sen, Esq.; one Kinta craft, now more than half subscribed; one Perak craft; one Kuala Lumpur craft; one Selangor craft; one Serampam and Pahang craft; one F.M.S. craft; one or two Singapore craft; one Penang craft; two aircraft from miners of the F.M.S.; two aircraft from planters of the F.M.S.

"There may be other patriotic and wealthy people in this country who also will be glad to present one entire aircraft to the War Office. The mining and planting industries here are very flourishing, thanks to the British Navy, and if the larger estates and mines would only give 100 dollars each, they could easily provide two aircraft each.—Yours, etc., C. ALMA BAKER."

This appeal has drawn forth a protest (published in the "Straits Echo") from one signing himself "M. L.," residing at Parit Buntar. Writing to the Editor, "Straits Echo," he says:

"Sir,—I have been very much interested in reading in your paper the lengthy letter from the pen of Mr. C. Alma Baker, who is, I believe, a colonial gentleman residing at Kinta, with large interests in tin and rubber. We have already in our local papers appeals for the Prince of Wales, Belgian Relief, and Serbian Relief Funds, and other funds, and in addition to these there is a fund for the provision of 'cigarettes pour nos soldats,' organised by a patriotic young French lady. These funds are for the relief of suffering where the red tape of a Government department is in most cases unable to reach. . . .

"But surely, Mr. Editor, the limit is reached when you allow a gentleman to appeal for subscriptions for a fund to provide munitions of war? But why appeal for funds to provide aircraft any more than any other form of armament or munition of war, such as artillery, boots, rifles, or .303 ammunitions? . . . Finally, let me add that the day after this effusion of his appeared in your columns there was a Reuter cable to the effect that Mr. H. J. Tennant, the Under Secretary of State for War, states definitely that the Air Services both on the Continent and with the New Army are adequate and efficient."

[It is, of course, absurd in these days to raise subscriptions for munitions which should be supplied by the Government, but it is really equally absurd to raise subscriptions for hospitals or anything else which supplies through charity what should be supplied by the State. As regards Mr. Tennant's statement. He has always been a follower of Colonel Seely (T.F.—temp Brig.-Gen.). *Verò. Sap.—Ed.*]

#### JAPAN.

From the "Manchuria Daily News" of May 6th:—"A military aeroplane, manned by Lieut. Sakomoto and an assistant, went out of order while in flight this morning, and was brought to the ground. Lieut. Sakomoto was slightly injured and his assistant had a bone in his leg fractured."

**THE DEATH OF COLLYNS P. PIZEY.**

All who had to do with flying in its early days will learn with the deepest sorrow of the death on June 11th of Collins Price Pizey, Flight-Lieutenant Royal Naval Air Service, and Acting-Commander Royal Greek Naval Air Service. Details of the cause of his death are not yet obtainable, and all that is known is that he died of dysentery, presumably in Greece, to which nation he was lent by the Admiralty as instructor in aviation as a member of the Naval Mission to Greece under Rear-Admiral Mark Kerr, M.V.O., R.N., which went out in 1912 to reconstruct the Greek Navy.

C. P. Pizey, born on April 1st, 1883, at Clevedon, Somerset, took his certificate, No. 61, on a Bristol box-kite, on Salisbury Plain, the certificate being dated February 14th, 1911. He was educated as an engineer, and passed through all the shops of the Bristol Tramway Co. There Mr. Pizey attracted the attention of Sir George White, the chief of the firm, who, always a shrewd judge of men, detailed him to assist Mr. Sidney Smith when the British and Colonial Aeroplane Company was formed late in 1909, or early in 1910.

The old hands at Brooklands will well remember the strenuous efforts with which Messrs. Smith and Pizey endeavoured to persuade the early imported Zodiac biplane to leave the ground, and the vast change which came over the scene when the Bristol Co. started building Farman-type box-kites, which, in their day, were the perfection of aeroplane design, and will always remain as examples of splendid workmanship, considering the total store of knowledge in those times. The first public appearance of the Farman-type Bristol was at Lanark in August, 1911, when Mr. Smith and Mr. Pizey worked day and night to get the best out of their machine.

Later on the Bristol School was started at Lark Hill on Salisbury Plain, with a branch school at Brooklands. That was in the heroic days of aviation, and fine as are our pilots to-day one doubts whether many of them could have flown as that little group of early box-kite pilots flew—Douglas Graham Gilmour, the greatest pilot of them all; Gordon England, still happily with us; Captain H. F. Wood, a Lancer officer, now a Major and bearing the burden of all the Vickers aviation work, but then noted for his neat flying; A. R. Lowe, who was alleged to fly with a slide-rule in his teeth, and only to be really happy when his engine stopped and he could calculate with certainty on the force of gravity, but who did priceless spirals all the same; poor Harry Fleming, who gave up flying and returned to join the R.F.C. a few months ago, only to be killed at Upavon. And a little later the famous Australians, Harry Busteed and Eric Harrison, that good sportsman Henry Jullerot, one of the earliest French fliers, and Howard Pixton, formerly of the Avro, now an R.F.C. officer, all now flying on Service in one way or another. And when one thinks of those days one always thinks of little Pizey,

who, somehow, without dominating, yet seemed to pervade everything any other pilot did.

As a star pilot perhaps he was not as great as Gilmour, but for sheer handling of an aeroplane he was unsurpassed. As an instructor, I doubt if we have ever seen his equal, and his pupils not only learned to fly, they learned to be something like decent mechanics, and especially they learned to acquire a lasting affection for their instructor. Possibly, Pizey had enemies—most men possessing any character do acquire enemies—but his friends are so many that I have never personally met any of his enemies. Pupil after pupil at the Bristol School sent his friends there simply so that they could be taught by Pizey, and this was genuine testimony to his worth, for the men who sent their friends to him were the best class of Army officer who would have been the first to spot it if there had been anything in his character which did not ring true.

Somewhere in 1911 Pizey and Fleming were sent to Brooklands to run the Bristol School there. That, indeed, was the Golden Age at Brooklands. There were half a dozen different schools there, but somehow Pizey's merry spirit and cheery honest heart pervaded them all, and the place was one big happy family. It was never like it before, and it was never the same after the day he left. His own meticulous personal neatness extended to the Bristol sheds under his control, and so seemed to infect untidy Brooklands with some sense of law, order and decency, and to-day even the Military sheds are not as smartly kept as were Pizey's sheds in those days.

He and his assistant, Harry Fleming, nicknamed "Little 'Appy" and "Big 'Appy," were a perfect pair, for they complemented and supplemented one another exactly, and though there was never any doubt as to which was the master, one never saw the little man assert his position. He might have joined other firms, greatly to his advantage, but he always said that Sir George White had given him his start, and he would stick to his job till one of the Services wanted him.

When the officer who had the Greek appointments in hand came and asked various and sundry of us who are concerned with flying who would be the best man of those available to select, the unanimity with which Pizey was recommended was truly remarkable, and showed the high estimation in which he was held. Of his doings in Greece little is known, for, in his usual thorough way, when once in the Service he adopted the proper Service attitude and kept his mouth shut about his own doings. Still, one knows that his senior officers held him in the highest regard, and after watching him at work for a couple of years placed more and more confidence in him.

If there had been more like him in the world there would have been less petty jealousy and back-biting and more hard work and progress in the industry and in the Services alike. The country has lost a valuable servant, and very many of us have lost a dear friend whose memory we shall cherish so long as we may live.—C. G. G.

**The Invasions of England.**

On June 8th, in answer to questions in the House of Commons as to the payment of public compensation for property destroyed during the recent air raids on London and other places, Mr. ASQUITH (Fife, E.) said:—"Relief will be granted in these as in previous cases. The Government are also considering the possibility of the initiation of a scheme of insurance of property against war risks."

On June 9th, Mr. FELL (Great Yarmouth, U.) asked whether the War Office had now decided to order all armed troops to fire on Zeppelin airships on their raids over this country whenever they came within range of rifles.

Mr. TENNANT (Berwickshire, L.).—"The orders are that all Zeppelins are to be fired at if and when they offer a target."

Mr. FELL.—"Does that cover rifle shooting as well as shooting from anti-aircraft guns?"

Mr. TENNANT.—"It would cover any case in which there is a possibility of hitting."

Answering Colonel Lockwood (Essex, Epping, U.), Mr. TENNANT said the order had been in force for some time.

Mr. ASQUITH replying to Sir A. Markham (R., Mansfield), stated that the Government policy of paying compensation for injury caused by hostile aircraft would apply to personal injury or loss of life, as well as to injury to property.

Mr. RAWLINSON (U., Cambridge University): "Must we continue insuring till the Government insurance scheme is produced?"

Mr. ASQUITH: "It would be a prudent thing to do."

\* \* \*

At an inquest held on June 9th on the body of Elizabeth M. Leggett, aged 11, the child of a carman, who died from burns, the jury found that death was due to shock from burns, sustained as the result of a bomb flung from a hostile airship exploding in the room in which the child, with four other children of the same family, was sleeping.

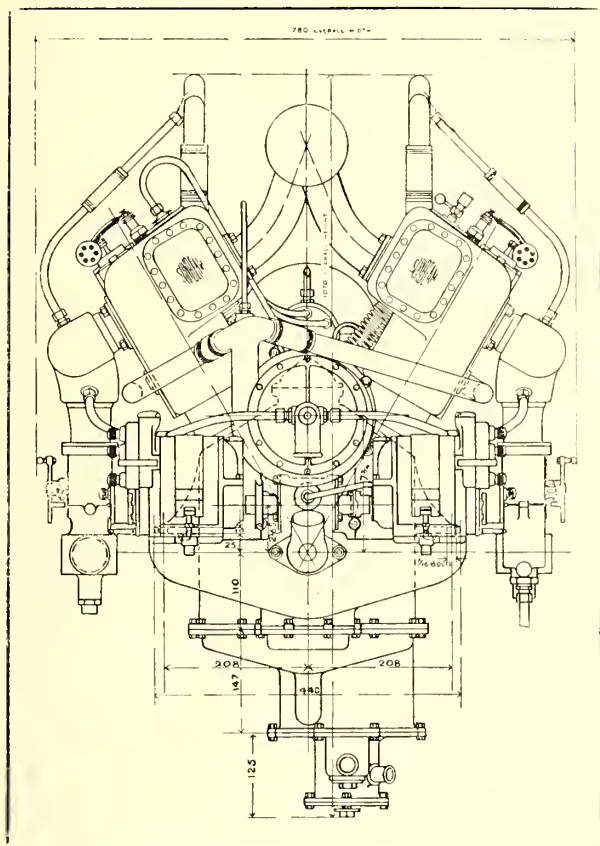
The child was one of a family of five children who lived in the district attacked on the night of May 31st. When the fire occurred four of the children were rescued by the father, but the fifth, a little girl of 3, was killed at the time, and an inquest was held on her body a week ago.





# Aero-motors: In Kind and Construction.—(Continued)

BY GEOFFREY de HOLDEN-STONE.



End View Diagram of the 225 h.p. Sunbeam Coatalen Aircraft Motor.

## Art in the Making.

In all those old indentures wherein we went by no royal road but roundabout to our craft, the Art thereof stood forth no larger than the Mystery, which merely consisted of many base but essential things not to be shown to the profane outsider. So there is much more in the true shaping of a Wieniawski polonaise in F, born in a double-stopping and dying in a harmonic, than skilfully drifting an actual Tubbs bow athwart an authentic Joseph Guarnerius. More, even, than twenty years' practice, or playing it for the forgotten thousandth time, like as the first. . . . Perhaps that infernal woman in the second box has hair and a ribbon in it exactly like the hair and the ribbon you played for in those sweet, terrible days and nights when you both seven-eighths starved *au sixième*, and the great man said you would never get beyond a provincial theatre. Heavens, how badly you played then, and how you worked! Yet not so much better now, you fancy, with a thousand guineas-worth of old maple and pine butted under your chin. And outside, it is snowing just as it did that night when they picked up the hair, the ribbon, and the rest from the bench in the Invalides. . . . These little things also count, as you get on with it, scraping to hundreds-of-years-ago in the second box. . . .

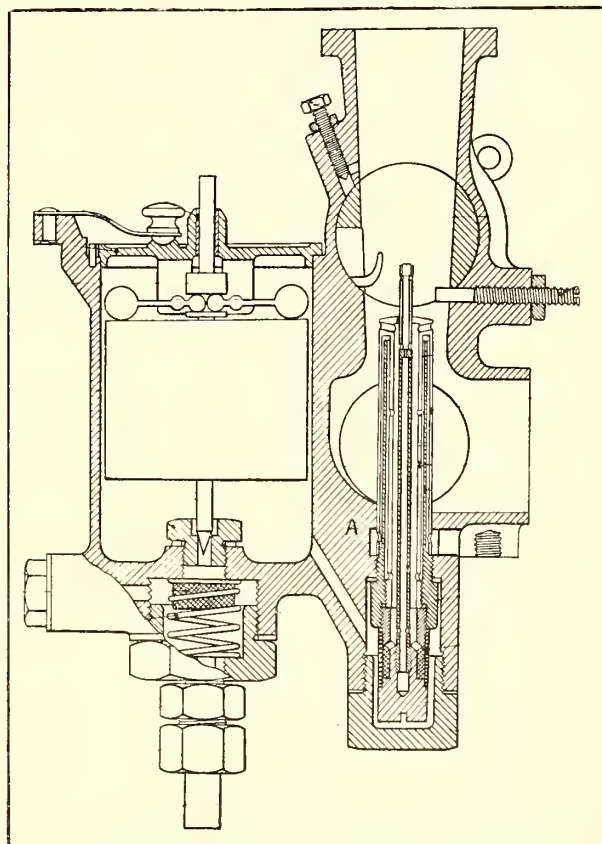
There are also other essential details in the make-up of the perfect result. For one, that little flat two inches of maple must literally grow out of the pine like the nipple on the breast, truly to carry every string-vibration down into that box which is the fiddle. And that growth is of no half-hour's penknife planing. Below, inside, where it can only be probed for, the little inch-and-a-half pillar of clear pine, of just such a thickness, must support five hundred pounds of string-strain

in just one place and no other. There are also only four strings, concerning three of which you will be lucky to find out the exact thickness the fiddle likes, and which of twenty makes of Roman, French, or acrielle after that, in six months' hard playing. These and such-like, including the silk-and-woollen fiddle-nightshirt, are some of the things that make up the mystery of really playing the fiddle, before the art of it begins in the deprecatory murmur of tuning, away from the crowd.

It is only a Kreisler, a Ceirano, or an Arthur Bluck that can truly deal with the mystery of fiddle-craft, or motor-craft, or clothes-craft, because they are artists who know that only thus and thereby comes perfection of melody or motor or garment.

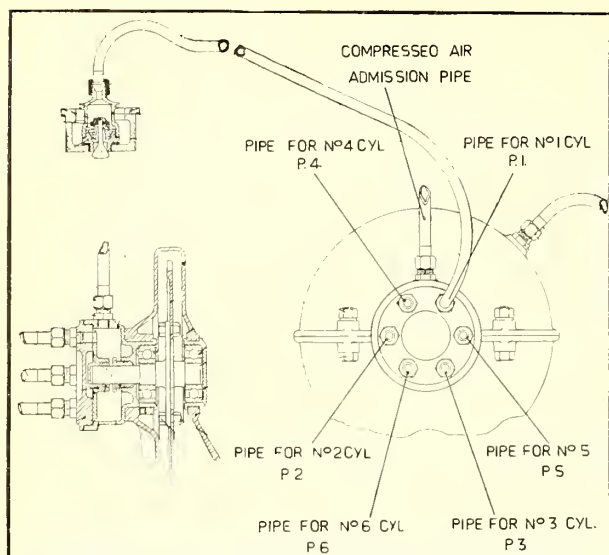
## And How It Comes In.

This, more than anything else, makes the adjustment and tuning up of a motor—even such a plain, straightaway proposition as the Sunbeam—the most interesting part of its assembly. Originally it may come from the works—I cannot say as to this—in one piece, so to say, with everything set in place and relation to half a thousandth by the men who know how, and are responsible for the breed. If so, thank your stars and let it all strictly alone—nor allow anyone to fiddle with it, under the extreme penalty—for as long as you can. There are light-hearted, heavy-handed amateur motorstrafers who will offer to set magnetos when they could not successfully set Buff Orpingtons. But if it comes with all its parts wrapped separately in greasy paper; or if the time arrives, somehow, anyhow, somewhere on the lee side of the Big Occasion, that you have just got to get that motor together, washed and dressed, with all its boots and buttons on, you may as well know how to find its proper trim and tune.



Section of the Sunbeam-Coatalen Carburettor.





The Compressed-Air Self-Starter for the Sunbeam-Coatalen Motor.

### The Foundation Laying.

There is, to begin with, nothing very difficult, nothing that you will not already have learned in your presumed apprenticeship to common or earth-motoring, about getting the main parts of the motor—be it eight or twelve cylinders—duly together: that is, the crankshaft properly lined and turning just right in its bearings—which means so close and tight-fitting that it is immovable until the oil gets in the brasses and all round the journals—the big ends set on the crank-pins in the same fashion; the pistons with their rings properly set; and the cylinders dropped over the pistons, settled down, and bolted home on the crank-chamber. The one thing to do, out of the ordinary, is to mark the rear end of the crankshaft across the centre with a fairly deep groove dead in line with the crank-axes; and upon that groove, right in the shaft centre, make a broad arrow pointing downwards to correspond with the bottom or dead-point down-position of the rearmost crank.

This marking, when you come to line up the cam-shaft and set it in gear, will enable you to start in the right position for timing the valves; and the cams, of course, being cut solid with the shaft, timing for the rearmost cylinder will set the timing automatically for the rest.

Obviously, therefore, you will leave all the covering and end plates off until the timing of both valves and magnetos is done with.

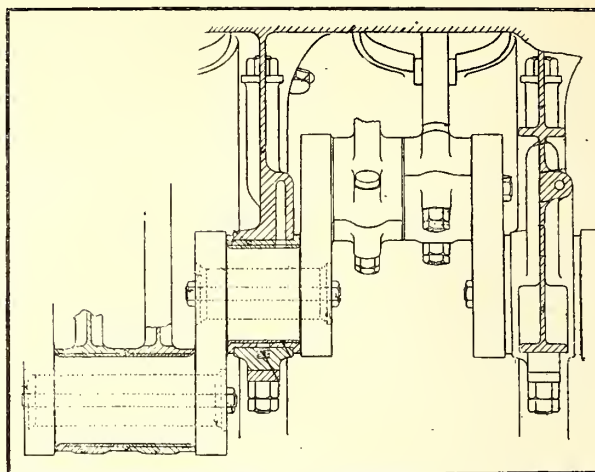
### The Valve Setting.

First, understand that both types of motor turn clockwise, looking from behind, anti-clockwise the other way, so that the propeller—which is driven through a reduction-gear, you will remember—turns clockwise, looking from the front.

Now, working from behind, turn the crankshaft so that the broad arrow mark points directly upwards: which brings the rearmost crank up to the top dead centre. Drop in the inlet and exhaust valves without their springs. Looking then along the uncovered cam-shaft, you will see exactly how the inlet valve cam comes up to its work.

Rotate it then so that the cam is at half-lift when the mark on the crankshaft end registers five degrees to the left of the vertical—that is, when the crank—and, of course, its piston—is five degrees from the upper dead point.

Now set the cam-shaft half-speed wheel in mesh with the crankshaft pinion and lock it home. Practically the work is now done, but verify it by rotating the crankshaft farther still, so that the cam-shaft—which will, of course, be rotated anti-clockwise—may go through the full induction period. The inlet cam should just leave the riser when the broad arrow mark—now turning downwards—coincides with seventeen degrees from the bottom dead centre on the left-hand side.



The Crank-Shaft and Big-End arrangement of the Sunbeam-Coatalen Motor.

If it goes past this point before the cam leaves you have set the induction a tooth too late; and if the cam leaves before this point is reached, a tooth too early. But if it just corresponds you will have got your induction period correct—that is, carried it through  $180^\circ + 5^\circ + 17^\circ$  of the revolution.

You can check it in another way. You will have seen that the exhaust cam leaves its riser some degrees after the upper dead centre, about when the inlet cam is getting towards full lift. But this exhaust cam departure should be just eleven degrees to the right of dead centre—that is, about two-thirds of the way to one o'clock. Yet it should begin to lift again—in the counter-clockwise rotation of the cam-shaft—about tea-time—that is, half-way between five and four o'clock, or seventeen degrees to the right of bottom dead centre on the second crank revolution.

Thus the exhaust period should be  $180^\circ + 11^\circ + 17^\circ$ ; so that the overlap of exhaust over inlet—to give the mixture a chance by relieving the pressure—is just  $5^\circ + 11^\circ$ .

### The Master Key.

You can make the final checking with a little rod marked for zero, when it is inserted through the spark-plug hole of the rearmost cylinder, with the piston at full instroke. Above

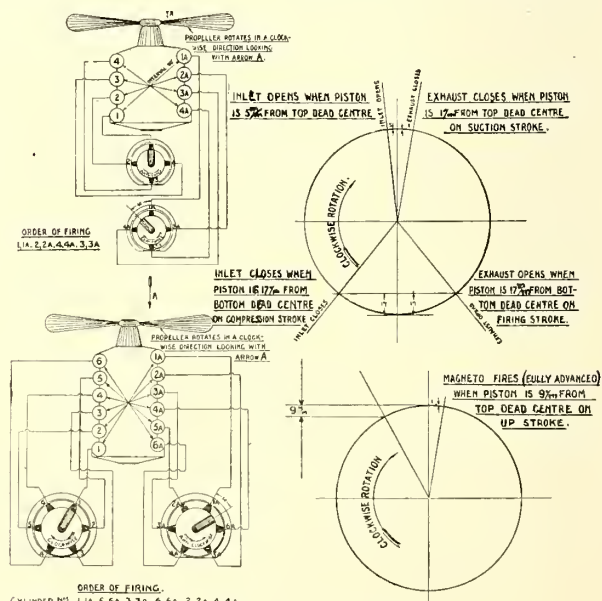


DIAGRAM OF VALVE SETTING AND IGNITION TIMING.

this, at 5 mm., make another nick, a third at 9 mm.—which will come in for the magneto setting—and a fourth at 17 mm., as it so happens that a millimetre of piston stroke corresponds to a degree of shaft revolution. This makes the magneto setting easier. Now you will observe that the firing order runs—in the eight-cylinder—puss-in-the-corner fashion, from rearmost No. 1 to foremost No. 1A, from 2 to 2A middling, then from 4 to 4A, and finally, middling the effort again, from 3 to 3A.

### Magneto Conjuring.

Working then on No. 1, set the magneto to full advance. At the same time bring No. 1 piston up to nine degrees short of the top of the induction stroke. The brush of the magneto should be just full on the contact segment for No. 1 to fire. So, mesh the gearing of this magneto and lock fast. At the same time, too, the brush of the second magneto—for the "a" series of cylinders—should be exactly midway between the contacts for 1A and 4A. The position secured, mesh up, lock up, and light up, for you deserve it.

The same system, of course, works for the twelve-cylinder model: the order of firing being 1 to 1A, 5 to 5A, 3 to 3A, 6 to 6A, 2 to 2A, and 4 to 4A. Such is the mystery of Sunbeam motor-fiddling: easy when you know the trick, like Tartini's famous "Trillo."

Everything else is merely a matter of attachment rather than adjustment; all you must see to being that packings and bondings are good of their kind, the best being just not too bad for the Sunbeam. So valve springs, connections of all sorts, and fitments generally go on by the light of nature and your pocket-bulb. Only oil up everything with kerosene or vaseline as it goes on, except magneto parts. The rest of the upkeep-and-maintenance proposition may be left to the Rolls-Royce. Still, should you have accidentally lost him in Plug Street or with an affinity behind the firing-line, here follow the general rules from the Book of Mystery.

### Grooming and Feeding.

The minimum oil pressure on full load must not on any account be less than 35 lbs. per square inch.

The inside diameter of the oil pipe from the tank to the intake of the pump should not be less than  $1\frac{1}{8}$  in. inside diameter. This pipe should be devoid of any sharp bends, and if a tap or a union is fitted the cross sectional area should not be reduced.

It is imperative that the spacing between the valve and the valve tappet should be—inlet, .010 in.; exhaust, .012 in., which, of course, you can easily measure with any of the slide-rules in your kit; failing those, any of your lady friends' calling cards will do.

The oil filter in the bottom of the crankcase should be frequently cleaned.

The oil tank must be placed so that it is exposed to the maximum draught, and the base chamber of the engine should also be exposed to as much ventilation as possible, and preferably should be open to the air. If the motor is enclosed louvres should be cut so as to allow a current of air to blow on the base chamber, and in this case it may also be found necessary to fit an oil cooler. The oil gauge will show if this is necessary. If the oil get too hot it will be so thin that it will be impossible to maintain the oil pressure above 35 lbs. The temperature of the oil ought not to exceed 60 deg. centigrade.

There should always be a reserve of at least one gallon of oil in the tank, otherwise there will not be perfect circulation.

An oil with a base of castor ought to be used. Wakefield's "R" Special Oil is recommended for Sunbeam-Coatalen Aircraft motors. If this cannot be obtained, use the best pure "Castrol." The oil cooler to be used is a coil of 20 feet of copper pipe,  $\frac{3}{8}$  in. by 20 gauge, for the 8-cylinder, and 30 feet of the same for the 12-cylinder, well exposed to the air and interposed between the outlet of the oil from the motor and the return to the oil tank.

It is important that the camshaft case should be filled with about half a gallon of oil, by pouring this through the breather hole before starting up, when the motor is new, or after it has been dismantled.

Care should be taken that the motor is inclined so that the

oil runs into the end of the camshaft case farthest away from the breather, to insure that every compartment is filled with oil. The reason for this is because the camshaft case holds a considerable quantity of oil and it would take too long for the feed pipe to fill this sufficiently to insure correct lubrication if the oil were not put in just so.

### Starting and Running.

The only points to remember for starting and running Sunbeam aeromotors are as follows:

Have the cylinders primed with petrol; the quantity to be put in is the capacity of the cup mounted on top of the compression tap.

Advance the magneto slightly—2 or 3 degrees.

Have the throttles of the carburettors shut.

It is useless to try to start with the throttles open or half open, because, if this is attempted, it is impossible to have sufficient depression on the jet, and back-firing in the carburettors will result, at the same time probably setting one or all of them on fire.

In very cold weather the motor should be run slowly, so as to warm everything up before it is subjected to full load. The motor will not give its full power until the inlet pipe has become warmed.

It is very important that the oil gauge should be watched, especially in cold weather, as it is possible that the oil will not flow to the pump quickly enough to maintain a good pressure. A minimum of 35 lbs. must be shown on the gauge; therefore run the motor slowly until the oil is sufficiently warmed up to obtain this pressure.

When accelerating the motor, the oil pressure should go up. If the pressure goes down it shows that the oil is too cold, and the engine must run at half throttle for a longer period so as to heat the oil.

Starting up is greatly facilitated if, before housing the aeroplane for the night, kerosene is injected through the compression taps and the crankshaft turned slowly round several times by hand with the compression taps all open.

(To be continued.)

### A Sensible Scheme.

Mr. F. C. Pullinger, managing director of Arrol-Johnston, Limited, has taken the eminently sensible step of protecting and encouraging his men by supplying them with khaki uniforms. The Arrol-Johnston firm, despite large outstanding orders for cars, accepted some time ago Government contracts for parts of aeroplanes, over and above their orders for Beardmore-Daimler aero-engines, as well as for machine-gun fittings and shell cases, and the workers in both the new model works at Dumfries and the older factory at Paisley have been putting in steady overtime since August last.

The idea of putting the men in uniform is thoroughly sound, for the "O.H.M.S." button is too easily obtained and is undoubtedly worn by people who are not genuinely entitled to it. One humorist who wears such a button under protest invariably refers to it as his "funk-button." Uniforms are another matter altogether, for they would be the property of the firm issuing them—in fact, they should, in a properly organised State, be issued by the Government, so that their wearers would be on the footing of soldiers, just as Lord Derby's battalions of dock labourers are actually battalions of the King's Liverpool Regt. One hopes that Mr. Pullinger's idea will be more widely adopted.

The said Mr. Pullinger has always had the knack of handling men, and the writer well remembers how, many years ago, when he was managing the Humber Works at Beeston, he had some little argument with the men about the speed of their output. They refused to speed-up, so one Bank Holiday Mr. Pullinger imported a "foreign" millwright from the North, and while the works were empty quietly changed the driving pulley on the main engine. When work began after the holiday the engine-driver kept up the normal revolutions of the engine, and at the end of the day the machine-hands found, to their disgust, that their output had increased some 20 per cent. without their knowing it. If the writer's memory is correct, the Trade Union called a strike as the result.



## FROM DENMARK.

THE AEROPLANE'S Danish correspondent writes:—

Evidently the Germans experience a want for light scouts besides the usual heavy service aeroplanes with water-cooled engines, for beside the Flugmaschine Rex Gesellschaft (Dr. Hansen's aviation company, manufacturing Bristol "scout" biplanes), the Fokker Aircraft Works at Schwerin specialise now too on light models. The Dutch crack pilot and factory owner Fokker indulged last year with high success in looping on a home-built Morane monoplane, and as the military authorities told him for further deliveries to abandon his old design—an aeroplane with only side and height rudders and V-shaped planes, without ailerons or warping—as only experienced aviators could land this type correct, Fokker builds now only scouting aeroplanes, with German Gnome (Oberursel) rotary engines, and thus the Morane monoplane and a tractor biplane with the Morane fuselage (much like "Lizzie," but with a landing chassis similar to the Lohner one).

A number of these new Fokker aeroplanes have been delivered to the Prussian, Bavarian and Austrian War Offices, and they are employed especial on the Eastern theatre of war—to avoid confusion with the French Morane?—where, among well-known aviators, Oberlieut. Kastner is in charge of one.

\* \* \*

The lack of high-grade steel sorts for the manufacture of Gnome engines seems to be indicated by big advertisements in "Flugsport" asking for Gnome crankcases with naked cylinders—that is, without valves, valve-stems, pistons, piston-rods, gudgeon pins, crankshafts, etc.

\* \* \*

In the issue of May 5th "Flugsport" deals in its leader with the state of aviation before and after the outbreak of the war, and from its comments of the war-faring countries after nine months' service these lines are interesting to extract:—

"France receives an unexpected high praise: nor has been rested in France during the nine months. Those successes which the French have attained with their types our aviators are experiencing at the front, where they have opposed to them a persistent enemy whose ability must be acknowledged. They stressed especial on the mounting of machine-guns and mitrailleuses. The fighting types of aeroplanes are getting further developed, the armouring is self-defining, and even France, the classic country of the light, quick monoplane, sticks now almost only to the stronger biplane.

"The biggest efforts, even concerning the attendance crews, pilots, observers, etc., have no doubt been carried out by England. The hydro-aeroplanes were represented plentifully, yet the number of aeroplanes was infinitesimal small by the outbreak of the war in comparison with the demand. Each new German raid on the English coast offers further new reason to the War Office for enlarging the English Air Service. At present, according to the 'Daily News,' once more 400 aviators are being turned out. Even though one must doubt much the truth of these news." [Which proves the correctness of the recent remark to abandon the further new pilots lists not to afford the enemy with information, as has "Flugsport" stopped publishing the certificates inventory of peace.—Hr.]

From other sources is learned that the British Admiralty, intending to extend the seaplane service, but lacking suitable pilots, has entered on communication with the Canadian Naval Department for turning out suitable pilots. According to French papers, a flying school shall be established for that purpose in the neighbourhood of Toronto, under the management of the Canadian aviator MacCurdy. [Which shows the folly of a British Censorship if Colonial papers can publish what they like. Still, the Colonial papers are just as likely to mislead as to instruct, so it does not matter, perhaps.—Ed.]

\* \* \*

In dealing with Russia the Russian aviators are accused of painting the Iron Cross on their planes, thus even on "Ilya Murometz" on April 20th, which hit instead of the munition trains, as told in the Russian report, some Red Cross trains! Besides getting aeroplanes from the Allies, Russia looks now even to have had sent pilots, for thus was observed in the Bukowina that English aviators piloted the Russian aeroplanes. [What can have originated this quaint yarn?—Ed.]

Further news are now available of the partaking of the Russian giant biplanes in the war. On April the 22nd three Sikorsky biplanes—or Ilya Murometz, as these aerial Dreadnoughts are official named—passed the German frontier together. The one dropped fifteen bombs of "considerable weight" (by one report 15 pounds apiece) on the city Plock, while the second Sikorsky biplane, coming from Kiev, bombarded Mlawka, and "Ilya Murometz III" fired on the German aviation camp in Sanniki. No report is to hand of the damage done, but all three giant biplanes are said to have flown high and to have returned safe.

The correspondent of the "Berliner Tageblatt" wires from the war press quarters:—"The giant Russian biplane which was shot down by Bartfeld, where three of the four passengers were found dead, and the fourth, the pilot, was taken prisoner, represent a developed type of the Sikorsky biplane, being an improved military model." However, he does not tell where it differs from the former Sikorsky biplanes.

\* \* \*

On April 29th a Russian aeroplane, of American design, was shot down in Sterkin by Eydtkuhnen, the passengers being killed. Which looks peculiar, as Russia was known to have sufficient aeroplanes by the outbreak of the war, indeed 1,000 aeroplanes (most Farmans, Nieuports, and Deperdussins) to 100 army pilots!

\* \* \*

"Flugsport" of May 5th contains the following casualty list:—

Feldflieger Department—Capt. Hering, wounded; Capt. and observer von Heyden, missing; Oberlieut. von Cleef, hitherto missing, now confirmed to have been taken prisoner; Oberlieut. and aviator Krüger, missing; Oberlieut. and observer Meyer, killed in fatal accident; Oberlieut. and observer von Zangen, hitherto missing, now reported killed in fatal accident; Lieut. Holzer, died from wounds; Lieut. Seeboth, missing; Lieut. Kraft, missing; Lieut. Treumann, killed in fatal accident; Officer Replacir Wohlmacher, missing; Officer Replacir Court, killed in fatal accident; Vizefeldwebel and observer Richter, missing; Sergt. Wolff, hitherto missing, now reported in prisonership; Sergt. Harder, died from his wounds; Subofficer Rauhut, hitherto missing, now reported to have been taken prisoner; Subofficer von Stülpnagel, hitherto missing, now reported in prisonership; Subofficer Gorlt, taken prisoner; Subofficer and aviator Haller, missing; Gefreiter Weber, killed in fatal accident; Gefreiter of the Balthasar Line Klein, died from illness; Aviator Sopp, slightly wounded; Motor lorry driver Zimmermann, heavy wounded; Motor lorry driver of the reserve Trotskowski, killed in fatal accident; Ersatz-Reserve Liebenlist, killed; Ersatz-Reservist Bucker, slightly wounded; Recruit Bücking, died from illness; Reserve Fritsche, hitherto heavy wounded, has died in prisonership.

Race-driver Brunu Demke, serving as aeroplane master by the Karpathian army, is reported to have been shot down on a patrol flight.

According to a settlement of "Hamburger Nachrichten," 131 persons belonging to the Fieldaviator troops have been awarded the Iron Cross, 1st Class, and thus 122 officers and 9 subofficers.

The German, Alfred Klinkmann, living in Milano, has presented the Prussian War Office with 10,000 mark to be awarded for gallant aerial deeds. [Mr. Klinkmann has probably left Milan by now.—Ed.]

## Oil for Troubled Motors.

The most important point to be considered in making a high flight, after the selection of a highly efficient machine, is how to make the motor give its maximum power under extremely trying atmospheric conditions. Among other absolute necessities is proper lubrication.

On the occasion of his record flight on Sunday, June 6th, when he reached an altitude of over 20,000 feet on a standard Sopwith land tractor, 80-h.p. Gnome engine, Mr. Harry Hawker used Castrol "R" oil, supplied by Messrs. C. C. Wakefield and Co., Ltd., the well-known lubricant distributors. Throughout the flight the engine behaved faultlessly.



**The Week at Hendon.**

On Thursday last Mr. M. G. Smiles made the first flight on a new 6-cylinder 45-h.p. Anzani-Caudron, built by the L. and P. Aviation Company. It is a single-seater of first-class workmanship, fitted with speed indicator and the usual instruments, and intended for pupils past the elementary lessons. On his second flight he climbed to 3,500 feet in 10 minutes.

Many visitors to Hendon lately have been interested to know the identity of the Belgian officer whose uniform contrasted so pleasantly with the dull though workmanlike clothes of the majority of pupils. M. Franchomme, of the 1st Regt. of Guides, was formerly attached to the armoured car section of the Belgian army, and had acted as military observer with the flying corps. He was one of the last persons to leave Antwerp before the German occupation, and he has recently been learning to fly with enthusiasm. He took his ticket excellently on June 4th, gliding from 800 ft.

On Saturday last there was in all probability more flying to be seen at Hendon Aerodrome than on any day since the outbreak of the war. The weather was excellent, and a good attendance made the enclosures look quite gay. Over thirty passengers were taken up, including a wounded soldier, who enjoyed the fresh-air treatment as given on a G.-W. biplane, piloted by Mr. Manton.

Mr. J. H. Moore, who has left the L. and P. School in order to give exhibition and passenger flights on the comfortable 45-h.p. Caudron specially built for him, was frequently up aloft, and flies carefully and well. Mr. Osipenko was busily engaged on a 50-h.p. Grahame-White biplane and also on the five-seater, making six flights with many passengers on the latter. Mr. Manton and Mr. Winter were using G.-W.s.

Messrs. Prodger and Roche-Kelly flew Beatty-Wrights, Messrs. Baumann and Virgilio were out on Caudrons, and Mr. J. L. Hall made his first public appearance on an experimental machine consisting of Caudron planes fitted with a fuselage and a 50-h.p. Gnome. It climbed well and is estimated to do 60 m.p.h.

On Sunday there was one of the largest crowds of the year. There was a light wind, and the air was rather bumpy. One visitor, on hearing this, remarked that no doubt it was due to the constant aerial traffic which was going on all the afternoon. To describe the flying is practically to repeat what took place the previous day, for most of the same pilots were out again. The industrious Mr. Osipenko, as is not unusual, gave the first demonstration of the day on a G.-W. biplane, and later on coaxed the five-seater up to a fair height accompanied by passengers. This machine flies fairly well with two passengers on board, but any addition to this weight seems unwelcome to the engine. It has been rumoured that it is to be called "the Ark" in future, as the animals go in two by two.

Messrs. Manton and Winter flew G.-W. biplanes, Messrs. Roche-Kelly and Prodger were on Beatty-Wrights, Mr. Johnson on a 45 Beatty-Caudron, Mr. Baumann on a Ruffy-Bau-

mann-Caudron, Mr. Moore on a London and Provincial Caudron, and Mr. Stevens on a Caudron from the Hall School. Several excellent flights by Mr. Stevens, by the way, were erroneously attributed by megaphone to Mr. Hall.

It was quite a Caudron matinée, and Mr. Ramsay, who is very busy building these useful little machines, wore a look of supreme contentment. Later on in the evening, when school work was at its height, though perhaps the word "height" is a little misleading, the experimental "Reo" was brought out for a trial, but after a very crooked "straight," which threatened to end in disaster, it retired to its shed. D. W. T.

**School and Weather Reports.**

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
South Coast...	Fine	Fine	Fine but Dull	Fine	Dull Fine	Fine	Fine
East Coast ...	Fine	Fine	Show'y & Fine	Wet, a.m. Fine p.m.	Fine	Fine	Fine
Hendon ... ..	Fair	Fair	Fair	Fair	Windy	Fair	Windy Rather Windy

**Hendon.**—AT THE BEATTY SCHOOL OF FLYING, LTD.—Instructors for the week: Messrs. G. W. Beatty, W. Roche-Kelly, C. B. Prodger, and P. A. Johnston.

Pupils with instructor on machine: Messrs. Arbon (28 mins.), Banks (27), Bond (25), Bush (9), Chalmers (55), Crossman (18), Delves (35), Eaton (55), Fawcett (20), FitzHerbert (30), Fox (8), Holland (60), Jones (59), King (51), Morgan (30), Robb (16), Ross (54), Rutherford (8), Spicer (10), Tomlinson (43), Vickers (16), Whincup (10), Theo (9), Blandy (64), Nicholson (12), Boyle (36), Kenworthy (100), King, G. F. (14).

Machines in use: Beatty-Wright dual control and single-seater biplanes and Caudron tractors.

Exhibition flights were given on Thursday, Saturday and Sunday, and four passenger flights were taken. Mr. G. F. King, who joined the Beatty School last week, and Mr. Blandy, who joined the previous week, are both doing well on the 45-50 Caudron biplane, and will take their certificates at the next opportunity. Mr. Reginald Kenworthy is taking extra practice and on his second flight attained a height of 3,000 ft., flying very consistently.

**AT THE RUFFY-BAUMANN SCHOOL.**—Instructors for the week: Messrs. Edouard Baumann, Felix Ruffy, Gino Virgilio and Clarence Winchester.

On Monday, on 60-h.p. Ruffy-Baumann biplane: Messrs. Hudson (8 mins.), Bell (24), Dixon (20), Robertson (8), Wallis (10), Brand (8).

On Wednesday, on 60-h.p. R.-B. biplane: Messrs. Crawford (10), Wilson (8), Hudson (8), England (16), Bell (15), Boison (5). Four passengers were also taken this day, one from Luton specially to make the ascent. On 50-h.p. Caudron-type biplane: Messrs. Crawford (20), Cole (5), Dixon (10).



*Photograph by F. N. Birkett, 97, Percy Road, Shepherd's Bush, W.*

**The Instructors and Pupils of the London and Provincial School of Flying.**



On Thursday, on 60 R.-B. biplane: Messrs. Hudson (12), Sykes (5).

On Friday, on 60 R.-B. biplane: Messrs. Hudson (10), Boisson (5), Leong (10), Sykes (10), Bell (10). On 50 Caudron-type, Messrs. Wilson (6), Wallis (4).

On Saturday, on 60 R.-B. biplane: Messrs. Mathewson (9), May (10), Sykes (9), Brand (9), Bell (10), Leong (10), Boisson (5), Hudson (11). On 50 Caudron-type: Messrs. Boisson (6), Bell (16), Brand (6), Sykes (6), England (6), Wilson (6), Mathewson (6), Cole (6). One passenger.

On Saturday, on 60 R.-B. biplane: Messrs. Mathewson (9), (10) On 50-h.p. Caudron-type: Messrs. Bell (6), England (4), Cole (6), Sykes (6).

Mr. T. C. Wilson, a new pupil, has shown very exceptional promise, so much so that the school manager is compelled to remark on his unusual ability. His "straights" have been perfectly straight and not of the customary vermiform nature.

AT THE GRAHAME-WHITE SCHOOL.—Instructors for the week: Messrs. Manton, Russell and Winter. Pupils with instr.: Prob. Flt. Sub-Lieuts. Cadbury, Linnell, Hardman, Pearson, Watkins, Wyllie, Penley and Sievking. Strts. alone: Prob. Flt. Sub-Lieuts. Pennington, Pearson, Linnell and Wyllie. Pupils doing 8's or circes. alone: Prob. Flt. Sub-Lieuts. Leigh, Linnell and Simpson. Prob. Flt. Sub Lieut. Simpson took a very good ticket on June 10th. Machines: Grahame-White biplanes.

AT THE LONDON AND PROVINCIAL AVIATION SCHOOL.—Instructors for the week: Messrs. W. D. Smiles, M. G. Smiles and W. T. Warren. Strts. or rolling alone: Messrs. Dower, Adams, Sykes, Minter, Nethersole, Irwing, Scott, Jacques and Wattine. 8's or circes. alone: Mr. Bell. Mr. Turner extra practice. Mr. Bell took an excellent ticket. Machines: Three L. and P. tractor biplanes. The new 40-h.p. London and Provincial biplane was taken up by Mr. M. G. Smiles for its first flight on Thursday evening and climbed splendidly. Mr. Smiles reached 3,500 ft.

AT THE HALL SCHOOL.—Considering the inclement weather during the week the pupils at the Hall School put in a good amount of practice. Rolling and strts. with Instructors C. M. Hill and Herbert James: Messrs. Cook 41, Hatchman 80, Snowdon 63, Hamer 26, Booker 50, Scott 31, Millbourne 41, Bayley 34, Russell 38, Lieut. Grant 53, Mr. Yonge 77, Mr. Gay 64, Lieut. Phillpotts 50 and Lieut. Raymond-Barker 31. Straight flights, circes., fig. 8's, etc.: Messrs. Furlong 34, Minot 12, Snook 28 and Mitchell 6. The following pupils are progressing very favourably and should shortly qualify for their brevets: Messrs. Snooks, Furlong and Minot. Exhibition flights were made by Instructors Stevens and Hill on tractor Nos. 1 and 2. Mr. J. L. Hall was out several times during the week on the new Gnome fuselage tractor No. 6. Machines in use during week were No. 1, 2, 5 and 6 Hall tractors. Things we want to know: Why a certain pupil turned up for practice early the other morning attired in evening dress; and whether burnt castor oil improves the condition of such clothing?

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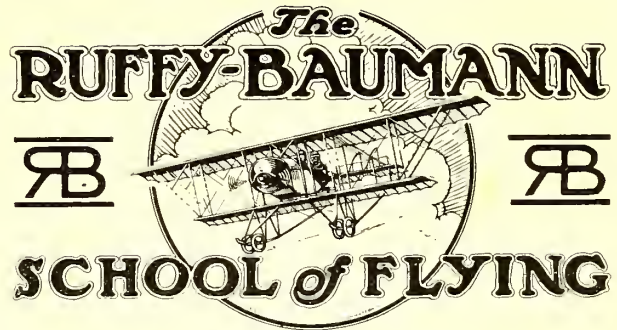
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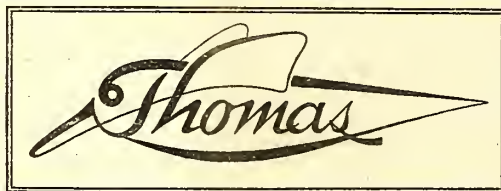
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"THE AEROPLANE," JUNE 23, 1915.

# THE AEROPLANE

12  
WEEKLY

Edited by C. G. GREY. ("Aero-Amateur")

VOL. VIII. [REGISTERED AT THE G.P.O.  
AS A NEWSPAPER.] WEDNESDAY, JUNE 23, 1915.

No. 25

## NEW PILOTS.



Photographs from the F.N.B. series of Pilot Portraits by F. N. Birkett, 97, Percy Road, Shepherd's Bush, W.

TOP ROW.—Prob. Flt. Sub-Lieut. G. H. Reid, R.N. (Cert. 1113, Grahame-White School); Prob. Flt. Sub-Lieut. L. H. F. Iving, R.N. (Cert. 1105, G.-W. School); Prob. Flt. Sub-Lieut. J. S. F. Morrison (Cert. 1108, G.-W. School).  
BOTTOM ROW.—Prob. Flt. Sub-Lieut. D. S. Sheehan (Chingford); Prob. Flt. Sub-Lieut. W. H. Dunn (Cert. 1106, G.-W. School); Prob. Flt. Sub-Lieut. A. R. Cox (Cert. 1279, Chingford).



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## On Zeppelin-Strafing.

Long ago, in the old days before the war, when the very distinctly limited monarchy of Great Britain and Ireland and the practically unlimited republic of France were merely on bowing terms and were not walking through history with their arms round one another's necks, or in one another's pockets, as is their present habit, the slow-witted and conventional Englishman was accustomed to make ponderous jests at the expense of the effervescent but practical Gaul. One of these jests, which became a classic through being illustrated in "Punch," told of a Frenchman who as a guest at a shooting party was seen taking careful aim at a pheasant running along the ground. To him his host cried, in astonished tones, "Good Lord, man, you're not going to shoot him running, are you?" And the Frenchman replied politely, "Mais non! I wait till 'ee stoops."

Something of the same idea seems still to have a hold on people in this country, for the great notion of everybody seems to be that Zeppelins—or other invading aircraft, for that matter, though Zeppelins represent the big game of the air—should always be brought down when flying, as apparently a sitting shot is not considered as noteworthy or as praiseworthy. Thus there is more joy in England over one Zeppelin which descendeth than over ninety and nine bust Zeppelins which need no descendance.

As a matter of fact, the destruction of a Zeppelin or any other airship in its shed is of greater value from a military point of view than the destruction of the same vessel in the air, for in the former case the shed itself, all its stores, and almost certainly a portion of the landing crew are abolished at the same time. It seems obvious that, though it may be good sport to destroy a noxious beast, it is better if one can destroy its lair as well, so as to prevent it from being used by still more noxious beasts.

### The Flying Shot.

There are also quite good reasons against the flying shot, from a purely humane point of view, because one can never tell on what the machine is going to squelch when it hits the ground.

The other day, a Mr. Coulson Kernahan, who has in his day written some rather good work, perpetrated in a daily paper a would-be heroic poem on the young officer—since dead, poor lad—who bagged the first Zeppelin on record. In his first verse he writes drivel about the airships coming "stealthily by night" and "Thereafter scurrying coward-like in flight," which is pure bunkum. One might as well call it "coward-like" for a submarine to dive after having loosed off a torpedo at a battleship. Only the other day one of our most experienced Service aviators remarked that it needs "d—stout fellows" to go out in these gas-bag things and chance being hit by anti-aircraft guns against which they cannot retaliate, and then run the gauntlet of a lot of aeroplanes if they cannot get home before daylight.

However, Mr. Kernahan's prize howler comes in his last verse, wherein he writes:—

"Pierced to the heart, the air-leviathan

Plunged, and bore with her, crashing down to hell,  
Twenty-eight Huns, slain by one Englishman."

Seeing that the "air-leviathan" fell on a convent, the allusion is scarcely one of the best poetic efforts. One seems to remember, though, that a Mr. Coulson Kernahan—possibly not the same one—was once connected with some ultra-constant pamphleteering of the hysterio-Kensitite type, so there may be some connection somewhere.

However, if a falling Zeppelin does, in Mr. Kernahan's picturesque phrase, crash "down to hell," it is merely carrying coals to Newcastle, and if it falls anywhere else, as on a convent for example, it is a public nuisance.

The Naval and Military authorities, and a few more of us, know fairly exactly the total amount of damage done by the three recent raids on the North-East Coast, and one may safely say that if one Zeppelin had fallen almost anywhere in any of those towns, as that Zeppelin in Flanders fell on that convent, it must certainly have done several times as much damage as all the raids put together. Therefore, if Zeppelin-strafting is to attain to anything like general popularity, it must be practised exclusively as a field sport, and must not be pursued over urban areas.

In the event of a really serious raid over London, for example, it might be cheaper, from an Imperial point of view, to bring a blazing Zeppelin full of bombs down on top of the Savoy—or even the Strand Palace—than to let it bombard the "nerve-centres" of Imperial defence in Whitehall without interruption; but, on the other hand, it would be cheaper to let it drop bombs all over the City than to bring it down anywhere inside the sacred "square mile."

For that reason it is far better that German airships should be destroyed in sheds at Düsseldorf, or Ghent, or Brussels, than in the air anywhere around London, and sections of the R.N.A.S. or R.F.C. stationed in Flanders for the express purpose of Zeppelin-strafting form a better defence of London than if they had Hyde Park for an aerodrome.

Even the R.F.C. people must admit that by their activities during the past few months in Flanders the R.N.A.S. detachment there has justified its existence. Though the work of the Naval aviators has not, perhaps, the same regular routine of spotting for artillery, or slogging round a regular reconnaissance route as clearly defined as a tranline day after day, as has the job of the R.F.C., there is considerable method in the Naval madness. They are there rather as an outpost of our home defence force than as a part of our Expeditionary Force, though, of course, the Army in France is itself more truly defending the British Isles than if it lived in trenches along the coast waiting for an invasion, or sat swinging its heels over the edge of the white cliffs of Albion.

Also, when one comes to consider the matter carefully, there is, in fact, more danger for the aviator in attacking an airship shed than in attacking an airship



in the air. To begin with, in attacking a shed he is the mark for all the anti-aircraft guns, machine-guns, and rifles on the ground, and, as he must drop his bombs from within a fairly closely defined area of sky in order to hit the shed, one may be sure that the scientifically thorough Germans have got all their ranges marked. Also, he probably has to contend with fire from a captive balloon or so, as did a resourceful young R.F.C. officer, who deservedly got a D.S.O., partly for being smart enough to lay the marksmen on the ground a stymie with their own balloon, and partly for damaging the shed and all that therein was.

On the other hand, the pilot who sets out to spike-bozzle a Zeppelin in the air as soon as a hick-boo is raised is not liable to be hit by anything except the machine-guns in the cars of the airship—except, of course, our own anti-aircraft guns—and if his machine

is good enough at getting upstairs quickly he can cross-waffle the airship crew by snookering them with their own envelope.

[Forgive this peculiar vocabulary. I have been discussing Zeppelin-strafting with certain evil aviators. To "spike-bozzle" is to "do in" or destroy utterly. A "hick-boo" is an onomatopoeic word invented by an aeroplane constructor, and indicating an alarm of almost any kind, but chiefly in reference to a hostile aircraft. To "cross-waffle" is to thwart in an unusually irritating manner. To "snooker" is a perfectly good phrase used in the game of billiards, and implies the same thing, I believe, as a "stymie" in golf—namely, to interpose an obstruction, which is itself in play, between the person aiming a projectile and his mark. While fully admitting the evil of slang, it must be admitted that the words are expressive, and therefore fulfil a useful purpose.]

## On the Effects of Advertising.

Naturally the bringing down of the first airship by means of bombs from an aeroplane is a matter of some moment. It is the first case on record, and therefore the perpetrator of the deed thoroughly deserved to be made remarkable in some way, but there seems to be a fairly general opinion in the Services that rather too much has been heard about the affair. The fact that the officer responsible for the achievement has since met his death in an accident does not affect the general aspect of the question.

The average newspaper seems to believe that its readers exist on a mixed mental pabulum of tosh and hero-worship. Hero-worship is probably more healthy food for the multitude than tosh, but it can easily become nauseating if carried to excess, especially to the unfortunate heroes.

Newspaper praise of the kind turned out by the average journalist is rather like alcohol; it may act either as an intoxicant or an emetic. The lucky man is he on whom it has the latter effect, for he never develops a craving for more. On the other hand, the man who finds his first drink of publicity too exhilarating may be stirred by it to do a few other things worth doing, but sooner or later he degenerates into a mere advertisement-hunter, and his efficiency as an officer suffers in consequence. He becomes unfit to command because he is always so busy getting himself into the limelight that he is apt to forget what is happening to the men in the shadow who are under his orders. Discipline becomes lax, organisation goes wrong, the men suffer as a result of it, and either become insubordinate "grousters" or else they turn into pirates and become generally disliked wherever they may happen to be. Up to a point, public applause may keep a man—generally a very young man—a trifle above his real form for a while, but it can never do anything but disimprove him as an officer. And it is just because officers are more valuable than "star turns" that the public advertising of popular heroes is unfavourably regarded by the higher Naval and Military authorities.

### A Prophet of Fifty Years Ago.

The other day a writer in the "Morning Post" resurrected, on quite another subject, certain words of the late Matthew Arnold, a writer for whom I have the highest respect, and about whose writings my ignorance is immense. However, I am deeply indebted to the "Morning Post" for the quotations, which read thus:—

"I have told you," says Matthew Arnold's Arminius, "our German programme—the elevation of a whole people through culture. That need not be your English programme; but surely you have some better programme than this your present one—the heatification of a whole people through clap-trap."

And again:—"The business now to be done in the world is harder than ever, and needs far more than has been ever yet needed of thought, study, and seriousness. Miscarry you must if you let your daily doses of claptrap make you imagine that liberty and publicity can be any substitute for these."

And yet again:—"Its dangers are from a surfeit of clap-trap, due to the false notion that liberty and publicity are not only valuable for the use to be made of them, but are goods in themselves, nay, are the *summum bonum*."

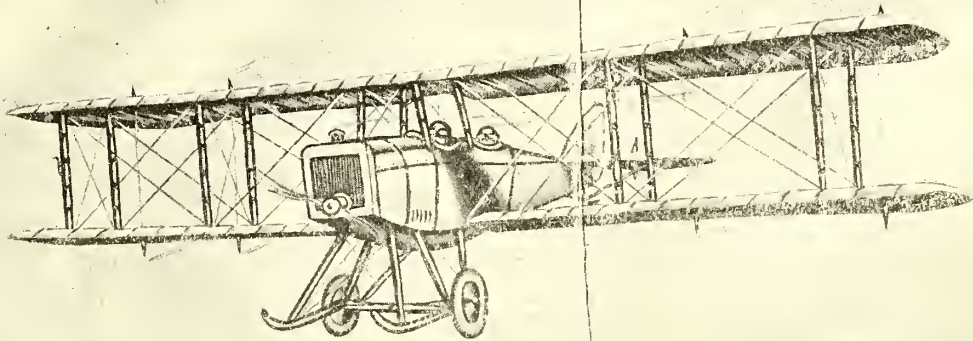
### The Meaning of Kultur.

People always make the mistake of translating the word "kultur" to mean "culture" as we understand it, as, for instance, the ability to read Browning without going to sleep after a page of him, or the ability to talk in literary English at little social gatherings of the "intelligentia," as they are known in Enrope, or the "high-brows," as the Americans call them. As a matter of fact, "kultur" really means something more like "cultivation," or rather "intensive culture" as practised by French market gardeners, which, when scientifically applied to a whole people as the Germans have applied it, is quite another thing. It simply means increasing efficiency, getting more results out of the work done, getting a better return for money expended, getting more work into the day by improved organisation without actually hustling the worker. It is exactly the complement of the American system of "speeding up."

What this country needs is a mixture of both systems. The British workman needs "speeding up," just to teach him what fast work is, and the British factory system needs "culture" to make the speeded-up work efficiently; then the whole combination can become effective.

The Americans are as full of "clap-trap and publicity" as we are, but they make good on their speeding up and a very fair capacity for organisation—which they owe very largely to the big proportion of Germans in their population. We in this country have all the clap-trap and publicity without the speed or the culture. Hence our failing as a nation to make good against modern competition.

Here and there the old blood of our pioneer ancestors persists, and it breaks out when anything really new, like aviation, comes along. The men who possess the old blood break away from their former dull occupations and get ahead of everyone else, because it appeals to their sporting instincts. They show the world how the thing can be done. Then Germany steps in and beats us on the scientific side of the game, and America beats us on purely commercial production. It has happened in cycle-making and in motor-making, and presumably it will happen again in aeroplane-making.



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F.B.H. LANDER 1915



Nevertheless, there are always a few British firms who manage to keep ahead of their rivals on sheer design and quality of workmanship, and doubtless history will repeat itself in this respect also.

Incidentally, as concerns publicity—or advertising—it may be noted that these high-class firms who retain their lead in spite of all competition are remarkable for the quiet dignity of their advertising, which inspires confidence in their customers because there is no clap-trap about their publicity. A parallel to the same idea may be found in the Services.

#### On Rewards and Fairness.

An officer who distinguishes himself by really good work is in due course given a D.S.O., or a Military Cross, or is specially promoted, or is noted for special promotion on attaining his next step in rank. He may even be given a V.C., though this decoration is usually given for sheer physical bravery rather than for service of high military value. In due course his name appears in "despatches," or is published in the "Gazette," together with a brief note stating in quietly dignified official language the particular service he has rendered.

That is all the advertising an officer of the best class cares to have, except that he may perhaps submit quietly to having his name mentioned in connection with an accurate and moderately worded account of the circumstances under which his honours were won, because such an account may elucidate certain matters of naval and military interest.

For this reason one is sorry to read in the "Times" the following letter:—

#### AIRMEN'S NAMES.

TO THE EDITOR OF THE "TIMES."

Sir,—In reference to the account in to-day's paper of the destruction of two German aeroplanes by two of our military airmen, may I ask why the names of airmen in the Naval Wing who do good work in destroying the enemy's aircraft are almost invariably published, while those of airmen in the Military Wing who do quite as good work are almost never published—much to their own discouragement and that of their relatives?

#### A MOTHER OF AIRMAN (MILITARY WING).

If this good lady really belonged to the military class she would understand the soldier's attitude towards being billed as a "star turn," which I have endeavoured to set forth above.

Every now and then the official "Eye-witness" tells in his own reserved and frequently quietly humorous way the story of how some unnamed officer of the R.F.C. has distinguished himself by some unusual performance, but the name of the performer is only made known in an official document such as the "Gazette" if the performance is of notable military value, or the Casualty List if the performer is damaged, which is as it should be.

It must be remembered that the R.F.C. works together as a huge team, and where all are working together so well it would be invidious to make distinctions. The bringing down of enemy aircraft is a matter of everyday routine, and if the authorities started publishing the names of all aviators who bring down Boshes they would be morally bound to mention also the names of artillery officers who score direct hits on enemy batteries and the names of infantrymen who capture opposition trenches. These acts are at least as important as bringing down aeroplanes, and the names of such officers appear in due course when at proper intervals D.S.O.'s and things are distributed.

#### The Deeds of the Flying Services.

Ever since the beginning of the war the R.F.C. as a corps, or team, has received its share of praise in the despatches from Sir John French, and in proportion to its size it has received far more than its share,

though the importance of the work it has done has fully justified every word that has been said about it. The honour of belonging to such a corps and the personal satisfaction of knowing that they have justified their appointments by the work they have done, suffice for most men. Nothing is perfect in this world, and the R.F.C. has its faults in personnel and matériel. There is plenty of room for reform in the organisation, the equipment, the appointments to subordinate commands, and so on; but, taking it all round, it is a corps to which anyone may well be proud to belong. It is therefore the better that its deeds should speak louder than its words. So far its advertising has been quietly convincing.

The R.N.A.S. is hardly in a different position when one considers what it has accomplished. One hears nothing at all about the major portion of its work. Some of its seaplane carriers were mentioned in connection with the Cuxhaven raid, and only then because it was the first time seaplanes had flown over hostile territory and had done damage; but nothing is heard of the constant patrol work, the spotting of mines and submarines, or the warning given of approaching enemy ships. No one hears, outside the official appointments as to the "Ark Royal," for example, of the existence of its other seaplane ships. No one ever hears of the patrols from the air stations along the coast. If anything, those sections of the R.N.A.S. are more silent than the R.F.C.

The first raiders into German territory from Antwerp were mentioned in a despatch and awarded D.S.O.'s. The Friedrichshafen raiders were also given reasonable publicity by the authorities, and duly rewarded, for that also was a notable feat. Other officers mentioned were those who raided the submarine slips at Hoboken, and those who first did serious damage at Bruges, Ghent, and Ostend. Subsequent raids have passed unmentioned and are regarded as a matter of course, and if one comes to count up the number of D.S.O.'s and other distinctions, including mention in despatches, it will probably be found that the R.F.C. officers have quite as big a percentage of awards as have the R.N.A.S., even if one counts in those R.F.C. officers who have had the bad luck to get little flying owing to shortage of machines.

It is true that the Admiralty is rather quicker than the War Office in publishing its accounts of what has happened, but that may be easily explained by the fact that, whereas the War Office was organised before the war to deal with a little Expeditionary Force of about 175,000 men, it now has to deal with several millions, and consequently what one may call the "trimmings" of its office work are apt to be neglected. The clerical side of the Admiralty, on the other hand, always had to run a big Navy, and was less discommoded than the War Office by its extra rush of work. And, anyhow, the Navy more easily adapts itself to rough and ready methods.

#### Relative Values.

As to the relative adequacy of the rewards given, naturally there is plenty of room for debate. There is a general idea that a Staff officer may get the D.S.O. for assiduity in seeing that his Corps Commander has a clean handkerchief every morning. The Staff is always a butt for the wit of the fighting officer. Hence the delightful, if wholly inaccurate, story of a distinguished General Officer who made the mistake of having his son with him as A.D.C. The well-meaning youth, taking an order to a crusty old Brigadier of Artillery, said, quite politely: "If you please, my father wants you to move your guns to So-and-so as quickly as you can." "Very well, my lad," replied the Brigadier, "now run away and find out what your mother wants done."

It is quite possible that Staff work in connection with





ERNEST B. H. LANDER, 1915.

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¶ The Beatty School of Flying while at Hendon has turned out more certificates than the total of those taken at all other existing civilian schools in England.

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the Flying Services may win D.S.O.'s where sheer hard labour in various and sundry aeroplanes does not, but that is all the fortune of war. The majority of acts deserving a V.C. are unnoticed in the rush of close fighting.

In a general way, it used to be a rule that a V.C. was awarded only to an officer or man who did something exceptionally brave off his own bat, apart from his routine job and without orders. The classic instance of differentiation was the case of Colonel Long's guns at Colenso. After Colonel Long and all his men had been shot down, Lord Roberts' son, a Subaltern of Rifles, got together a couple of teams and tried to get the guns out. He and his men were also shot, and he was awarded the V.C. after his death. If my memory is right, another officer also tried, but his horses were shot before he got there, and he got nothing. Then a gunner officer, Lieut. Schofield, went out, at the suggestion of a senior officer, and retrieved two guns, for which he was eventually given the D.S.O. The difference was that Mr. Roberts failed in a gallant attempt outside his own job, whereas Mr. Schofield succeeded in doing distinguished service which came within his regular work.

Another instance, which is not so well authenticated, is much more puzzling. The story is that two cavalry officers, both of whom had personal and private reasons for wanting to be killed, made bets in their mess on the result of a race between them, the course being from our lines to the Boer trenches and back—there were no barbed-wire entanglements in those days. One of them had already won the V.C. in the Soudan—if I recollect rightly. Anyhow, they went full tilt for the Boers, who were too surprised at their lunacy to fire at them. They rode right up to the trench, checked their ponies on the edge of it, and then galloped back, having looked long enough to form some idea of what the Boer position was like. The Boers opened fire at their backs, but neither was hit, and they brought back a little information, so the other officer was given a V.C. also. I believe he was killed later on in command of some scouts, but his rival lived to acquire much further distinction.

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\* \* \*

Those concerned with the Aircraft Industry are requested to note that the telephone number of Handley Page, Ltd., Aeronautical Engineers, 110, Cricklewood Lane, N.W., is now "Hampstead 7420," also that this number covers three separate lines, so that there should be little delay at any time in getting on to the firm.

The fact that Handley Page, Ltd., which was one of the

Thus one sees that the V.C. may be won "for valour" with or without valuable results, whereas the D.S.O. is won for "distinguished service" with or without personal risk.

Which may account in some way for the fact that the officer who first succeeded in dropping bombs on a Zeppelin gets no public reward, because, through no fault of his own, but apparently through insufficient experiment before the war in discovering what would and what would not set fire to hydrogen, the bombs, although they exploded, did not set the machine alight. He took all the risk of being blown up, but was not in fact subjected to the actual danger.

It is rather as if an infantry officer bravely charged a German position and all the German machine-guns jammed so that he and his men escaped unhurt. Their valour in attacking would be as great as if they had charged into a hail of bullets, and possibly the suspense of not being fired at when expected would cause greater nerve strain, but few people would regard them as being as worthy of reward as if they had been fired upon.

A similar situation occurs in Mr. Shaw's play, "Arms and the Man," concerning a discussion on the valour of the Bulgarian cavalry officer who charged a Serbian battery in ignorance of the fact that the battery had been served out with shells that did not fit the guns. It raises a pretty point in ethics. Mr. Shaw's pitilessly logical "chocolate soldier," the Swiss artilleryman, holds that the Bulgarian was a fool to lead his men to what ought to have been certain destruction, and the Bulgarian leading lady argued that he was a hero because he captured the battery, even though he only succeeded through sheer luck.

And, after all, most distinctions and rewards are won more by luck than judgment. The really successful man is he who sees when luck runs in his direction and grabs it. Or, as Shakespeare puts it, in rather a better way, perhaps—for, after all, William could write quite well at times, even if he did come from Stratford-on-Avon, where about the worst English in England is spoken—"There is a tide in the affairs of men, which, taken at the flood, leads on to fortune."—C. G. G.

first two or three firms founded in this country exclusively for the manufacture of aircraft, should now find their business enlarged to such an extent as to require three telephone lines is not only an indication of the prosperity of that particular firm, but shows to what extent the Aircraft Industry has grown since, say, 1909, when any firm dealing exclusively with aeroplanes would not receive more than one call per week.

One can only hope that the time will come when Handley Page, Ltd. and the other pioneer firms will have as many telephone lines as the big Department Stores.

### The R.N.A.S. Comforts Fund.

In spite of the distracting influences of Zeppelin raiding and Zeppelin-strafting and the consequent extra expenditure incurred by investments in insurance, respirators, chest protectors, and bomb-proof shelters, certain kind and thoughtful people continue to remember the necessities of the crews of the seaplane carriers who are now undergoing various degrees of grilling and freezing "from —'s icy mountains to —'s coral strands" (deletions by Home-grown Censor).

Mrs. Sueter has received large quantities of "comforts" from Mrs. Lumley Holland, made by Girl Guides.

The following cash contributions have also been received:—Employees, South Coast Aircraft Works, £10 10s.; Employees, Sopwith Aviation Co., £9 13s. 6d.; Employees, White and Thompson, Ltd., £1 15s.; Sir Wm. Plowden, £1; Mr. Martin Sutton (collected), 12s.; Miss E. Lloyd Jones, 10s. 6d.; Vickers Ltd. (Woodworkers, Aeroplane Department), 22nd contrib., 6s., 23rd contrib., 6s. Total, £24 1s. Grand total to date, £952 11s. 1d.

Further contributions, in cash and kind, should be sent to Mrs. Sueter, The Howe, Watlington, Oxon, so that comforts may be stored up in readiness for the winter campaign.

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## Naval and Military Aeronautics.

### GREAT BRITAIN.

From the "London Gazette," June 15th, 1915.

ADMIRALTY, JUNE 12TH.

ROYAL NAVAL AIR SERVICE.—Granted temp. commn. as flight sub-lieut.: Hon. M. H. E. C. Towneley-Bertie, June 4th.

R.M.L.I.—Capt. A. C. Barnby granted temp. rank of major whilst holding appt. of sqdn. com. in Royal Naval Air Service. May 27th.

From the "London Gazette," June 16th, 1915.

WAR OFFICE, JUNE 16TH.

MEMORANDA.—Qmr. and Hon. Lieut. T. Lyons, Royal Flying Corps, Military Wing, to be temp. capt. whilst employed as Staff capt. at War Office. June 17th.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. lieuts. (on prob.) confirmed in rank: L. F. Page, A. B. Rendall. To be sec. lieuts. (on prob.): B. C. McEwen. May 28th. O. Greig. May 29th. June 1st: C. E. Wardle, K. D. P. Murray. June 2nd: A. M. Low, W. D. S. Sanday, E. B. Broughton.

TERRITORIAL FORCE.—YEOMANRY.—2ND CO. OF LONDON.—Sec. Lieut. H. M. Goode seconded for service with Royal Flying Corps. May 22nd.

R.F.A.—7TH LONDON BRIGADE.—Temp. Lieut. R. A. Saunders seconded for service with Royal Flying Corps. March 9th.

From the "London Gazette," June 17th, 1915.

WAR OFFICE, JUNE 17TH.

REGULAR FORCES.—SPECIAL RESERVE OF OFFICERS.—Sec. lieut. (on prob.) confirmed in rank: Royal Flying Corps (Military Wing)—L. M. Bennett.

From the "London Gazette," June 18th, 1915.

ADMIRALTY, JUNE 15TH.

ROYAL NAVAL AIR SERVICE.—Proby. flight sub-lieuts. confirmed in rank of flight sub-lieuts.: T. K. Young. October 7th. R. H. Routledge. January 4th. J. S. F. Morrison. February 9th. R. M. Everett. February 12th. T. C. Vernon. February 26th. F. W. Lucas. February 27th. C. V. Arnold, R. G. A. Baudry, G. G. Dawson. March 18th.

Proby. flight sub-lieuts. for temp. service confirmed in rank of flight sub-lieut. for temp. service: C. W. Graham. April 12th.

JUNE 16TH.

ROYAL NAVAL AIR SERVICE.—To be flight lieut.: F. A. Brock. January 1st.

WAR OFFICE, JUNE 18TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers to be flight comms.—May 25th: Lieut. N. C. Spratt, S.R., and to be temp. capt. whilst so employed; Capt. T. W. C. Carthew, 4th Beds.

Flying Officers.—June 4th: Lieut. H. A. P. Disney, 2nd Cambs, T.F.; Sec. Lieut. W. Reid, 6th Lpool., T.F.

From the "London Gazette," June 21st, 1915.

WAR OFFICE, JUNE 21ST.

ROYAL FLYING CORPS.—MILITARY WING.—Sgt.-maj. to be qmrs., with hon. rank of lieut.: June 1st, E. J. Parker, S. J. Payne.

### NAVAL.

The following appointment was notified at the Admiralty on June 15th:—

ROYAL NAVAL AIR SERVICE.—Seaman F. C. Walker, R.N.V.R., transferred to R.N.A.S., as proby. flight sub-lieut., for temp. service, to date June 21st.

The following appointments were notified at the Admiralty on June 16th:—

Asst. Paymaster T. A. Batchelor, to the "President," additional, for Naval Air Station, Calshot, for special duty, temporary, to date June 15th.

ROYAL NAVAL AIR SERVICE.—Messrs. A. Rawlinson granted temporary commission as temp. com., R.N.V.R., and J. E. Arrol Hunter granted a temporary commission as sub-lieut., R.N.V.R., and appointed to the "President," additional, for duty with the Armoured Car Aeroplane Support, both to date June 15th.

Messrs. C. J. Price (to date June 2nd) granted a temporary commission as lieut., F. W. M. Moore and M. H. Rattray (to date June 4th), and G. M. Morse and S. J. Hanna (to date June 2nd), granted temporary commissions as sub-lieuts., R.N.V.R., and all appointed to the "President," additional, for R.N.A.S. (armoured cars).

Messrs. C. H. M. Chapman, C. O. Carden, J. B. Cussen, and W. Croucher, entered as proby. flight sub-lieuts., for temporary service, and appointed to the "President," additional, for R.N.A.S., to date June 21st.

Air Mechanic S. Kemball, promoted to proby. flight sub-lieut., for temporary service, and appointed to the "President," additional, for R.N.A.S., to date June 15th.

The following appointments were notified on June 17th:—  
ROYAL NAVAL AIR SERVICE.—Flight Coms.—C. E. Maude, to the "President," additional, for R.N.A.S., and A. J. Miley, to the Air Department, Admiralty, as assistant to Director, Air Department, to date June 15th.

Mr. G. T. Davies granted a temp. commission as lieut., R.N.V.R., and appointed to the "President," additional, for R.N.A.S., to date June 16th.

Temp. Lieut., R.N.V.R., F. A. Brock granted a commission as flight lieut. and reappointed to the "President," additional, for R.N.A.S., to date January 1st.

The following appointments were notified on June 18th:—  
ROYAL NAVAL AIR SERVICE.—Capt., R.M., P. Owen graded as acting flight commander, to date June 1st.

Temp. Sub-Lieut., R.N.V.R., N. S. Lott, to the "President," additional, for R.N.A.S., to date June 17th.

The following appointments were notified on June 21st:—  
ROYAL NAVAL AIR SERVICE.—The undermentioned have been granted temp. commissions as lieuts., R.N.V.R., and appointed to the "President," additional, for R.N.A.S., to date as mentioned: J. M. Anderson, A. J. Brown, R. A. Robertson, H. J. Smith, R. N. Spence, R. D. Spinney, J. A. Williams, June 13th; A. L. Lingard, F. B. Bedford, June 15th; G. P. Stanley and N. C. Power, June 19th.

The following have been granted temp. commissions as sub-lieuts., R.N.V.R., and appointed to the "President," additional, for R.N.A.S., to date as stated: T. B. Ross, June 6th; R. N. Perks, June 19th; D. S. R. Kent, June 13th; A. H. J. Creighton, June 11th.

The undermentioned have been entered as proby. flight sub-lieuts. for temp. service, and appointed to the "President," additional, for R.N.A.S., to date as stated: E. A. O. Auldjameson and S. O. Smith, June 14th; F. J. L. Bishop and L. Briffault, June 26th.

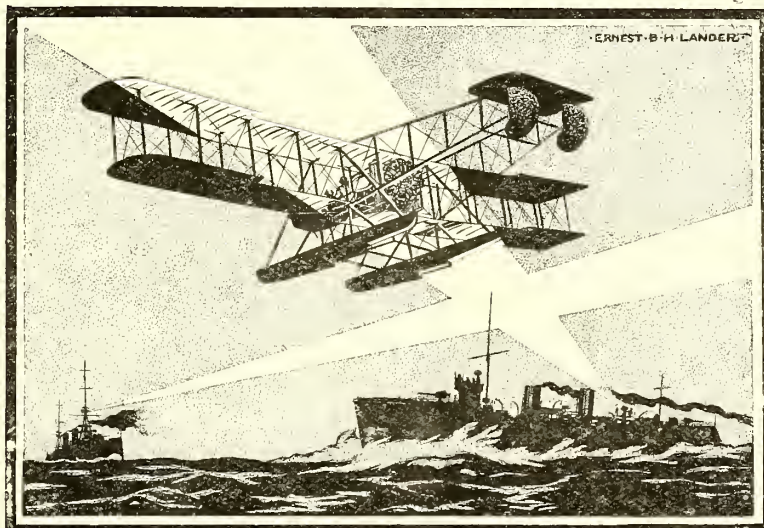
Mr. P. Burke, entered as warrant officer, second grade, for temporary service, and appointed to the "President," additional, for R.N.A.S., to date June 19th.

The following have been entered as flight sub-lieuts. for temporary service, and reappointed to the "President," additional, for R.N.A.S., their temporary commissions as lieuts., R.N.A.S., having terminated, to date as stated, viz.: Temp. Lieuts. R.N.V.R.—M. H. Spencer, June 4th; A. P. MacKilligin and E. J. C. Roberts, June 1st.

Temp. Sub-Lieut., R.N.V.R., H. McClelland, entered as proby. flight sub-lieut., and appointed to the "President," additional, for R.N.A.S., temp. commission as sub-lieut., R.N.V.R., terminated.

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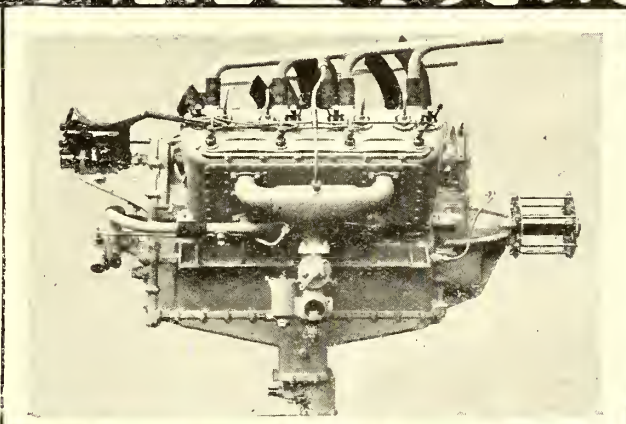
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The Secretary of the Admiralty announced on June 18th the following casualty under date June 17th:—

**ACCIDENTALLY KILLED WHILST FLYING.**

Flight Sub-Lieut. Reginald A. J. Warneford, V.C., R.N.

\* \* \*

R. A. J. Warneford was born in 1892 in Kuch Behar, India, his father being a Civil Servant lent to that State. He took his certificate, as noted recently, at the R.N. Air Station at Hendon in February of this year, and afterwards went to Eastchurch. Thence he was appointed to a squadron now operating at Dunkirk. A week or so ago he distinguished himself by being the first aviator to bring down a Zeppelin while it was in the air. He had the reputation of being a bold and somewhat reckless flier, who trusted to his natural quickness to get him out of tight corners when an older and more experienced flier would have been sufficiently cautious not to get into them.

Various accounts agree that he was killed while flying a Henri Farman at Buc. It seems likely that after flying the Morane parasol, which is abnormally quick on the elevator and very obstinate in other directions, he may have misjudged the distances necessary to control the slower moving, but eminently docile Farman.

It is also reported, on undisputed evidence, that he had an American journalist with him as passenger at the time of his death and that the passenger was also killed. This matter appears to require investigation. If the machine was Government property no neutral passenger, least of all a civilian, should have been in it, unless, of course, he was temporarily on official work. If the machine was not Government property an officer should not have been flying it, unless officially ordered to test it. What is commonly known as "joy-riding" either by passengers or pilots is not regarded with favour in time of war.

The death of the journalist is, of course, an inconsiderable matter, but has probably spared us much sensational descriptive matter concerning the R.N.A.S. in the American Press. The death of Mr. Warneford deprives the Service of a pilot who might have done much useful work as an air raider before meeting his eventual end.

The body of Mr. Warneford was brought to England on June 21st, and was buried at Brompton Cemetery on the 22nd.

\* \* \*

The funeral of Flight-Lieutenant H. G. Wanklyn, R.N., elder son of Mr. and Mrs. H. A. Wanklyn, 10, Marlborough-mansions, Hampstead, took place at Calais on Saturday, June 19th. He was killed while piloting a seaplane off the Belgian coast, a German shell hitting the machine which had come down in the sea. His body was subsequently recovered.

Flight Lieut. Wanklyn was born on August 3rd, 1895, was educated first at Merton Court School, Sidcup, and then at University College School, Frognal, where he joined the O.T.C. and took his A Certificate. He entered the Royal Naval Air Service on the 12th of May, 1914, taking his pilot's certificate on the 1st of July at the Central Flying School, Upavon. He received his commission on August 1st, and has of late been stationed at Isle of Grain, for seaplane work. He was popular with his brother officers, and gave promise of winning his way to high rank on personal merit and ability.

\* \* \*

Contrary to a statement in *THE AEROPLANE* recently, Flight Sub-Lieut. Travers, R.N., was not injured in an accident at sea. He was, in fact, a passenger with the late Flight-Lieut. Barnes, R.N., who was killed recently while landing at dawn when it was almost dark. Owing to the bad light and a ground fog the machine turned over in landing. Lieut. Barnes was caught by the top plane and crushed, but Lieut. Travers was thrown clear of the wreckage, and only badly shaken. He made gallant efforts to rescue his companion before he himself collapsed.

\* \* \*

A collision between a naval motor-car and a taxicab at Eastbourne resulted in a charge of manslaughter being brought against Flight-Lieutenant Robert Hilton Jones, R.N.A.S., at

Eastbourne Police Court last week. The driver of the taxi, Ernest Henry Chinery, was so injured that he died in a few minutes. The Town Clerk, who prosecuted, said the Coroner's jury found that death was accidental, but the Chief Constable was not satisfied with the verdict. The jury seemed to have come to the conclusion that because the night was dark it was an excuse for defendant being on the wrong side of the road.

Lieut. Colin George Shearer, Royal Army Medical Corps, said that on the night of the accident he went to the Hippodrome with a lady. They left between 10.30 and 10.45, and drove in a taxi to the sea-front. The vehicle was driven at a very moderate pace. Dr. Kenneth Frazer, who was walking along the seafront with his wife, said a motor-car passed him at a tremendous pace, and he heard a crash soon after.

Miss Bontoft, aged sixteen, stated that she was with Lieut. Shearer. After the collision she had to keep to her bed for a week. Mr. Percy Ellison, engineer and general manager of the Eastbourne Corporation motor 'bus department, thought that the naval car must have been driven at not less than thirty miles an hour.

The Bench decided that a prima facie case had been made out, and decided to commit defendant for trial at the Assizes, but they admitted him to bail, and the Chairman expressed the opinion that the case should not interfere with any duties he might have to perform.

[On the purely technical point of driving on the wrong side of the road, one may point out that when driving in the dark with compulsorily dim lights it is the safest thing to do, for one can always see the lamps of approaching vehicles, and avoid them, whereas one's own lights are incapable of showing up people walking, pushing handcars, or cycling, if one overtakes them when on the left side of the road, and one may easily run over them if only travelling at 12 or 15 m.p.h., because the rule about carrying tail-lamps on cycles and barrows is habitually neglected, and pedestrians always assume that one is able to see them when overtaking them, and do not even step out of the way. Consequently the only way to be sure of missing them is to drive slightly to the right of the crown of the road.—Ed.]

\* \* \*

The engagement is announced of Flight Commander Richard Edmund Charles Peirse, R.N., D.S.O., now abroad with a Naval Aeroplane Squadron, only son of Vice-Admiral Sir Richard Peirse, K.C.B., M.V.O., Commander-in-Chief East India Station, and Lady Peirse, to Mary Joyce, younger daughter of Mr. and Mrs. Armitage Ledgard, the Manor House, Thorner, Yorkshire.

**MILITARY.**

The Field-Marshal Commanding the British Forces in France reported as follows:—

June 19th, 1915.

3. The electric power station at La Bassé was successfully bombed yesterday by our aviators.

\* \* \*

The following appeared in the Casualty List published on June 21st:—

PREVIOUSLY REPORTED MISSING, NOW REPORTED KILLED.

Woodiwiss, Sec. Lieut. I. N., Lincolnshire Regiment and Royal Flying Corps.

\* \* \*

Once more it is necessary to record the death of an experienced military aviator in an accident in this country. On the morning of Monday last, June 21st, Major H. T. Lumsden, commanding the military school at Brooklands was killed, and his passenger, Mr. Carpenter, apparently a probationer for the R.F.C., was severely injured. Details of the accident are not available, but it appears that Major Lumsden had taken Mr. Carpenter out for instruction on an Avro biplane, and was forced to land outside the track near Addlestone, presumably by engine failure. One assumes that the machine met some obstruction in alighting and overturned. The fact that the pupil was only injured points to some unusual circumstance, in that, as the passenger sits in front, one would expect the pilot to escape more lightly than the passenger, unless it happened that in a dual-control machine the instructor was



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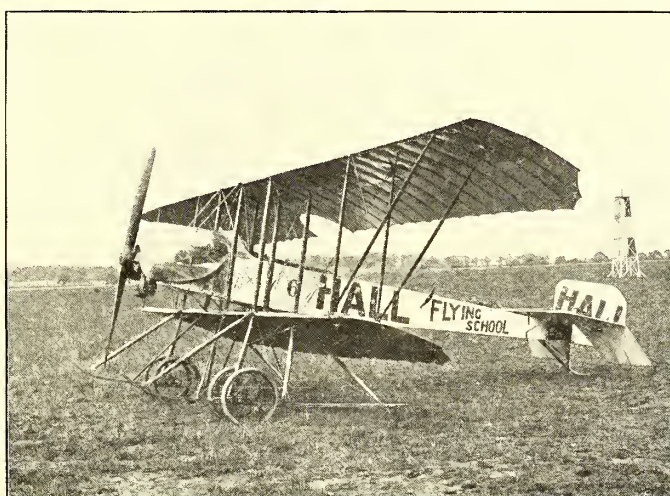
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sitting in front so as to give the pupil practice in the pilot's seat.

Harry Tailyour Lumsden was born on April 15th, 1879, in Edinburgh. He took his certificate, No. 853, at the Vickers School at Brooklands on July 22nd, 1914, and was appointed a Flight-Commander, R.F.C., on November 28th, 1914. He was recently appointed a Squadron-Commander and temporary major, and has for some weeks been in charge of the school at Brooklands. During that time he won the regard of all who came in contact with him, and his loss will be deeply regretted.

Major Lumsden got his first commission in the Cameron Highlanders in 1898 and his company in 1903. He was Adjutant of the Special Reserve from October, 1913, to September, 1914, when he was seconded to the Royal Flying Corps.

He was the eldest son of Mr. William Harry Lumsden, of Balmedie, Aberdeenshire, by his marriage with the eldest daughter of Colonel Thomas Renny Tailyour, of Borrowfield, Forfarshire.

His brother, Captain C. R. Lumsden, Gordon Highlanders, was killed at the front early in the war, and another brother, Captain B. N. Lumsden, 2nd Seaforth Highlanders, was reported missing last month.

\* \* \*

An R.A.M.C. Territorial on very active service "anywhere in Belgium," writing to a friend, says:—"Thanks awfully for all your letters and regular delivery of the "rag" (meaning *THE AEROPLANE*), which is really coming on.

"Have you seen the new type of Caudron with the very short lower plane and the Gnome engine? Gee! she does climb some. I got a fairly close view of a Voisin blindée the other day. They are fine 'buses, and seem to do an awful lot of work. Hast yet seen the new Martinsyde scout going all out? If not, do—and die.

"Yes, the poor old Bosche planes are right out of the picture these days; absolutely skinned to death."

#### FRANCE.

The communiqué of June 15th says:—

As a reprisal for the bombardment by the Germans of open French and British towns, orders were given to bombard this morning the capital of the Grand Duchy of Baden. At three a.m. 23 aeroplanes left for Karlsruhe, and, in spite of a northerly wind, they arrived over the city between 5.50 and 6 a.m.

They dropped 130 projectiles of 90 and 155 millimetres on the points indicated to them, notably on the Castle, the arms factory, and the railway station. Many fires were seen to break out while the aeroplanes were over the town.

A great panic was observed in the station, whence trains were dispatched in haste towards the East.

The aeroplanes were vigorously bombarded on the outward journey at Saverne (Zabern), Strasburg, Rastatt, and Karlsruhe, and on returning at Blamont, Phalsbourg, and Saverne. All the aviators returned safely, except two.

\* \* \*

The following official French communication was issued by the Press Bureau on June 15th:—

The German communiqués of the 12th and 13th of June call for the following observations:—

(4) At Lunéville a German aviator, chased by two French aviators, threw at random five bombs, which caused neither accident nor loss. These useless and ill-directed attacks are designed as a set-off to the success of our air-raids.

[This seems rather a childish observation. Obviously an aviator who was being chased would jettison his bombs at random in order to lighten his machine.—Ed.]

\* \* \*

The communiqué of June 16th says:—

A German aeroplane was obliged to come down in our lines near Noroy-sur-Ourcq, north-east of La Ferte-Milon. The aviators were made prisoners.

\* \* \*

The later communiqué of June 16th says:—

During Tuesday some bombs were dropped on Nancy, St.

Dié, and Belfort by German aeroplanes. At Nancy some civilians were struck.

\* \* \*

The communiqué of June 17th says:—

Our bombarding air squadrons effectively bombarded the enemy reserves at Givenchy and at La Folie Wood, and dispersed masses of troops in process of formation.

\* \* \*

The later communiqué of June 17th says:—

An enemy aeroplane was brought down by one of our machines in Alsace. Both the German aviators were killed.

\* \* \*

The "Liberté" relates how, the day after the Germans had tried to bombard Verdun with 15 in. guns from Spincourt, an Aviatik flew over the station to take photographs of the damage which the Germans believed they had done. The pilot came down to 600 ft. from the ground. Two French aviators immediately went up to attack him. Their chase was very short. A few minutes after they had opened fire on him the pilot was struck by a bullet, and his machine was brought to the ground.

\* \* \*

It is reported from Paris that Squadron-Commander Briggs, of the "British Aerial Service," is mentioned in Army Orders for having given a remarkable proof of courage and endurance in penetrating a very long distance into the enemy's country and bombarding a military establishment. It is added:—"He fully succeeded in his mission, although he was wounded."

[Just why this "citation" is made at this date is not clear, unless it is to remind some of the newer pilots that others did big things before anyone heard of them.—Ed.]

\* \* \*

His many friends in this country will be pleased to hear that M. Paul Gondre, well known as chief engineer to the late Mr. Gustav Hamel, is now an "aviateur breveté," having been removed from the Foreign Legion in which he passed the first six months or more of his military career, and appointed first as Caporal-Mécanicien in the Escadrille de Paris at Le Bourget, and then as "Elève pilote" at Etampes. He is now Caporal Aviateur, and at the time of writing to his friends in London hoped to pass for his "brevet militaire" in a short time. He is one of the finest engine tuners and aeroplane regulators in the whole industry, and it seems almost a pity to risk losing such a valuable engineer by using him as a pilot. However, all will wish him success and distinction such as has already come to so many of the Hendon people who are now on active service.

#### GERMANY.

The communiqué of June 15 says:—

On Sunday the church at Leffinghe, south-west of Ostend, was bombarded by hostile artillery during Divine service for the civil population, several Belgian civilians being wounded.

Yesterday the open town of Karlsruhe, which has no connection with the theatre of war and which is without the slightest fortifications, was bombarded by an hostile air squadron. Up to the present it has been ascertained that eleven civilians were killed and six wounded. No military damage could, of course, be caused.

One of the hostile aeroplanes was brought down by one of our war aeroplanes. The occupants were killed. Another enemy aeroplane was forced to descend near Schirmeck.

[Really this communiqué is most comforting. The hypocritical whine about bombarding a church, and the renewal of the bleat about dropping bombs on an "open" town, are worthy of the English Press. Time was when the Germans would have said nothing about the church, regarding its bombardment as an ordinary act of war. Also, a long time ago when French aviators dropped bombs on a big building used as a hospital at Freiburg-im-Breisgau, a German report actually said that doubtless it was mistaken for military headquarters as it was the biggest building in the town, and the writer of the report seemed rather pleased that the French had deceived themselves in this way. If the logical and scientific German mind is being reduced to the level of the Nonconformist Conscience it rather looks as if it were losing its nerve, which is an excellent sign, from our point of view.—Ed.]



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The communiqué of June 20th says:—

Of a hostile air squadron which bombarded Isegghem (Flanders) without doing any military damage, one aeroplane was brought down. Another aeroplane was shot down over Vouziers, in Champagne.

\* \* \*

A Berlin telegram via Amsterdam, dated June 17th, says:—

"On the night of the 15th-16th our naval airships carried out an attack on the north coast of England. A coast place was bombarded. The airships suffered no damage whatsoever.

\* \* \*

A Karlsruhe message received at Amsterdam on June 15th via Berlin tells the following story of the raid:—

"This morning five enemy aviators bombarded Karlsruhe for three-quarters of an hour. Several persons were killed or wounded. Material damage, of no military importance, was done at numerous places."

Another message states that "the aeroplanes were over the city from 6.45 till 8 a.m. The central districts near the Castle suffered mostly. The Margravian Castle was also hit by a bomb."

[The Castle is only about 100 yards from the important railway station of Karlsruhe, which was no doubt the aviators' objective. Near the station are large railway works, and further east across the line are artillery barracks and a depot.]

Karlsruhe, capital of the Grand Duchy of Baden, has a population of about 100,000, and there are numerous chemical and engineering works in the neighbourhood, which, of course, are busy turning out munitions of one sort or another, so that the place was fair game even according to the old rules of war. Apart from that, one of the chief uses of aircraft is to carry war into the heart of the enemy's country, especially into his capital cities, and impress on the stay-at-homes the fact that there really is a war, and that they as much as the soldiers at the front are going to suffer for it.—Ed.]

\* \* \*

A message from Karlsruhe to the "Svenska Dagbladet" (Stockholm, June 16th) describes the attack on the city as an exceptionally daring enterprise. Very considerable damage was caused, eleven people were killed and six injured. The bombardment lasted forty-five minutes.

Official German wireless news of June 16th received by the Marconi Company says nineteen persons were killed and fourteen seriously injured by the raid. Numerous people were slightly wounded. The bulletin adds:—

"The population is calm, but embittered, on account of this senseless procedure."

[The last phrase is one of the most priceless of the war, and

one hopes that Mr. George Morrow will be moved to give us in "Punch" a picture of a "Calm but Embittered German Family" as a companion to that epoch-marking group of a German Family having its Morning Hate.—Ed.]

\* \* \*

According to the "Frankfurter Zeitung," the Grand Duke of Baden has sent the following telegram from the front to the Burgomaster of Karlsruhe:—

The Kaiser telegraphs me his deep indignation at the wicked attack on beloved Karlsruhe. The poor, innocent victims among civilians have greatly distressed him.

A telegram from Berlin tries to discredit the French airmen by declaring that they were doubtless aware that in the Castle of the Margrave, which was considerably damaged, were the Grand Duchess Louise and the Queen of Sweden. The telegram says that several splinters flew into the room of the Swedish Baroness Hochschild, and that the children of Prince Max of Baden, the roof of whose bedroom was demolished, only narrowly escaped. Eighty-four civilians were killed and wounded.

[That almost sounds like the bleat of an English paper.—Ed.]

A German official message has been issued protesting against the air raid on Karlsruhe, and pointing out that German air raids have been directed against fortified places, or at least places closely connected with the war. Where German airmen have attacked open towns it has been solely by way of reprisals. [Again, how very English.—Ed.]

\* \* \*

A message from Bâle says that on June 17th French aviators bombarded Guebwiller and Colmar. They dropped proclamations, which read: "Alsations,—Italy is helping to crush Germany! Long live France and Alsace!"

\* \* \*

The following note, officially circulated through German wireless stations, has been received by the Wireless Press:—

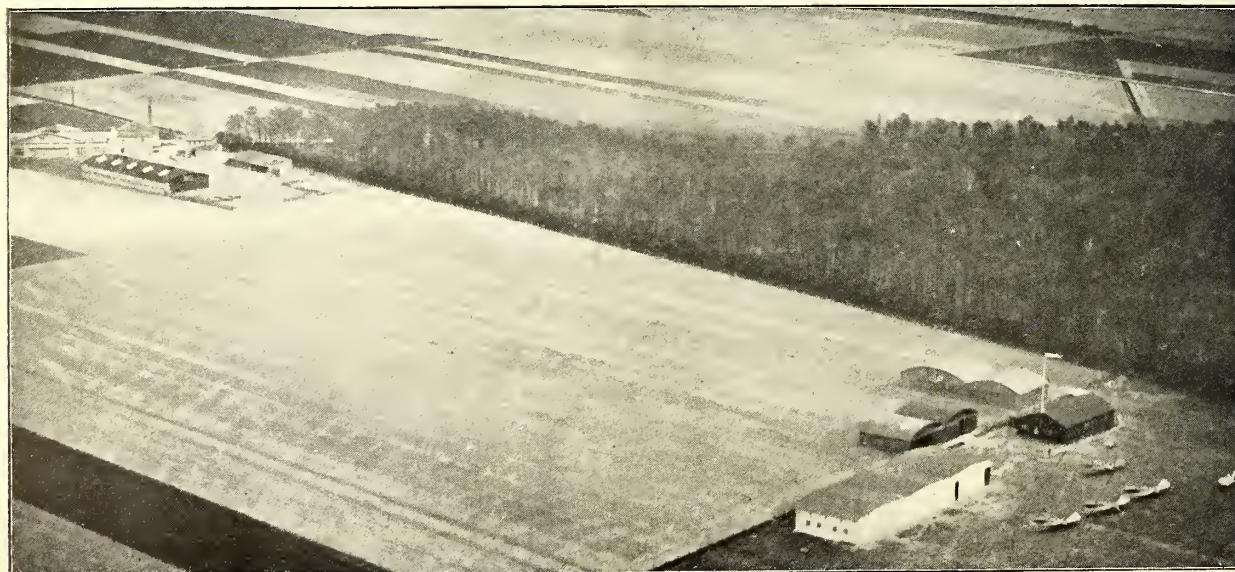
Berlin, June 21st.

An official statement referring to the attack by airmen on Karlsruhe explains how heretofore German airmen and airships bombarded places of military importance only, while exceptions were always explicitly mentioned as retaliations to similar enemy measures.

\* \* \*

A "Neutral Observer" who has been relating his experiences in the "Times," concerning a visit to Germany, makes some curious remarks on the subject of aircraft. He says:—

"But the great hope of the Germans lies in a combined action of submarines and airships. It is their belief that this contest will soon take place in an attempt to destroy the British



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Fleet, which, according to the Germans, is hiding in terror of submarines off the west coast of Ireland. This is to be the decisive 'trial-at-arms' with England, to which Germans look forward with confidence. 'The future of Germany lies in the air' is a phrase repeatedly quoted. All Germans appear to have unbounded faith in their Zeppelins. While the public is engrossed in the accomplishments of Count Zeppelin's creations and grows enthusiastic over raids on undefended English towns, technical experts are striving ceaselessly to produce a more efficient aeroplane.

"A German 'flight-captain' informed me that the Taube pattern of aeroplane has been discarded by the authorities as unstable and wholly unsatisfactory for military purposes, as are other types of monoplane in view of their inability to carry a sufficient load, and that the Germans are now exclusively making biplanes of an improved Farman type. The conquest of the air by Germans has not advanced as smoothly and rapidly as they have anticipated. German experts admit that the French are still superior in the field of aeronautics."

The Taube pattern aeroplane certainly is unsuitable for military purposes on account of its slow speed, but it is absurd to say it is unstable. It is highly improbable that the Germans are concentrating on building machines of the Farman type, although it will doubtless soon be possible to describe some "surprise" machines of large size. Undoubtedly the most successful German aeroplane has been the tractor biplane of the Albatros type. It is inconceivable that a "Flight Captain" should seriously admit the superiority of the French in the field of aeronautics.

#### ITALY.

A statement issued by the Naval Chief of Staff in Rome on June 17th says:—

One of our airships, passing over the enemy's entrenched camps last night, dropped powerful bombs on the important railway junction at Divazza, causing great damage. The airship returned unharmed, despite a vigorous fusillade from the enemy's rifles and machine-guns.

\* \* \*

The following official communication was issued in Rome on June 17th:—

The Austrians are sending little balloons over our soldiers, which burst and drop leaflets containing invitations to desert. The leaflets promise for each rifle brought in ten kronen, for each machine-gun 500 kronen, for each gun or aeroplane 2,000 kronen, and for each horse 150 kronen. The leaflets advise wholesale desertion, because all goes well in Austria and prisoners are well treated.

\* \* \*

The communiqué of June 18th says:—

On the night of June 17th, while a naval airship destroyed the railway station at Divazza, our dirigibles were carrying out raids over enemy territory. They apparently bombed effectively positions at Monte Santo and the entrenchments opposite Gradisca, and also damaged very seriously the station at Oviadraga, on the Gorizia-Dornberg line. They returned safely.

\* \* \*

The later communiqué of June 18th says:—

Yesterday afternoon an Austrian naval force made an appearance at the mouth of the Taglianento. It was made the object of repeated attacks by squadrons of our destroyers, and met with no other success than the damaging of a lighthouse. Our destroyers, although counter-attacked by a waterplane, returned safely.

Simultaneously we carried out an aerial bombardment of the Austrian lighthouse at Salvore.

\* \* \*

It is reported from Rome that a seaplane (said to be the fourth) has been captured off the Italian coast. The machine flew over Venice from Pola, but had to descend on its way back and was picked up by an Italian patrol boat.

#### BELGIUM.

Two Zeppelins were observed on June 14th over Belgium, near the Dutch frontier, flying in a westerly direction. One of them descended between Antwerp and Herenthals, and was not

restarted for a considerable time. The other disappeared towards the west. It was said to be travelling at a high speed, which seems natural considering the strong East wind which was blowing.

\* \* \*

The "Handelsblad" (Amsterdam, June 15th), referring to the air raid at Evère, near Brussels, on June 7th, confirms the rumour that a Zeppelin was destroyed. Seven railway wagons, filled with the wrecked framework of the airship, were sent back to Germany.

\* \* \*

An Amsterdam message dated June 16th says that early that day three English aviators made an air raid to Ghent and the neighbourhood. About five bombs were dropped on a Zeppelin shed at Gontrode, south-east of Ghent. Details were still lacking when the message was sent.

\* \* \*

The "Handelsblad" reports that at four a.m. on June 16th two French aviators attacked Brussels, apparently intending to destroy the balloon sheds. The bombs missed their mark and the sheds were not damaged. Some of the French projectiles landed on a meadow near Vilvoorde.

\* \* \*

It is reported that during the evening of the same day hostile aviators flew over the Belgian coast and dropped a large number of bombs on the coast positions at Zeebrugge, Heyst, and Knocke. Thirteen searchlights were turned on them and numerous batteries opened fire, but the aviators escaped.

\* \* \*

The "Handelsblad" (Amsterdam, June 17th) states that early on that day two French aviators made an attack on a Zeppelin shed to the north of Brussels. The shed was not damaged. On the return journey the aviators dropped a bomb on the Place Rogier in Brussels.

[It is not shown how the "Handelsblad's" correspondent knew they were French, nor how two aviators dropped one bomb.—Ed.]

#### HOLLAND.

The "Groninger Dagblad" (Amsterdam, June 15th) learns that the British officers who were interned at Groningen have withdrawn their parole. They will now be taken to Wierickerschans or to Urk, and guarded there.

[Quite a large number of these officers belong to the R.N.A.S. and R.F.C. One R.N.A.S. officer has already tried to escape from Urk, so doubtless the new arrivals will be extra strictly guarded, and will find their confinement especially unksome—as one of their friends puts it.—Ed.]

#### TURKEY.

An official communiqué issued in Constantinople on June 17th says:—

One of our airmen observed in Kephali Bay, near Imbros, a battleship of the "Agamemnon" type, the deck of which was almost submerged, while her after funnels and masts were completely under water.

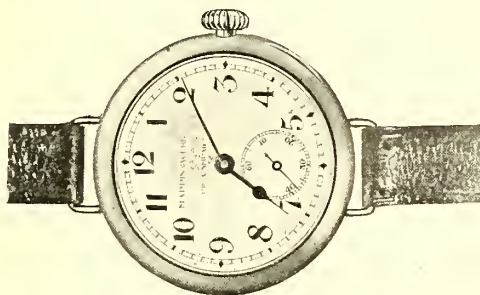
[He must have had a curious view to see funnels and masts under water while the deck was still above. So perhaps he may have mistaken the type of ship also.—Ed.]

#### U. S. A.

The flying boat presented through the Aero Club of America to the Naval Militia of New York State by the Curtiss Aeroplane Company of Buffalo, is to be assigned to the first battalion, which has its headquarters on the U.S.S. "Granite State," at the foot of West Ninety-seventh Street, New York City. Commodore R. P. Foreshow, head of the Naval Militia of New York State, has advised the Aero Club of America to this effect, and Commander Charles L. Poor, of the First Battalion, is now selecting candidates for the course of training to be given both a pilot and a mechanic at either Buffalo or Hammondsport, New York. When the men have been properly trained, a new flying boat, of the type supplied to the navies of different countries by the Curtiss Company, will be delivered to the Naval Militia of New York State.

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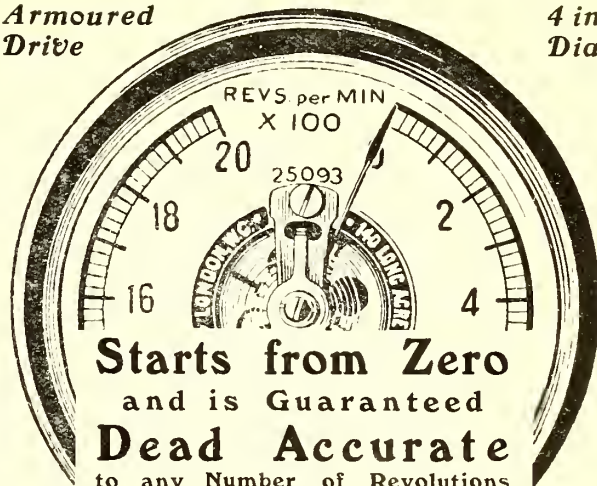
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men. The christening, by Miss Mona Dunne, daughter of the Governor of Illinois, was a social affair and the flying boat was named "Alice" in honour of Mrs. Andrews and Miss Alice McDonald.

Secretary of the Navy Daniels, in a letter to Mr. Alan R. Hawley, President of the Aero Club of America, expresses his appreciation of the value of the National Aeroplane Subscription as follows:—

"My dear Mr. Hawley,—Your letter of the 18th ultimo in regard to a public subscription for aeronautical purposes was duly received. I am greatly interested in anything that is being done to assist in the development of aeronautics in this country. I congratulate the Governors of the Aero Club of America on the public spirit which has prompted them to start a public subscription to raise funds to further develop aeronautics in this country.

"As you undoubtedly know, I am not allowed legally to consider public subscriptions for the Government's use. It would seem, though, that you could be of great assistance to the Naval Militia at the present time by obtaining aeroplanes for them by popular subscription. If you will apply to Captain Bristol, he will be very glad to assist you in any way that is possible so far as he properly can. By thus conferring with him, you will be able to work, as you have suggested, in harmony with the United States Navy.

"Your idea of creating a valuable and efficient aeronautical reserve is an excellent one, and I am sure that you will meet with that measure of success that your efforts deserve. I desire to thank you and the Governors of the Aero Club of America, so far as the Navy Department is concerned, for the interest taken in this subject.

"(Signed) JOSEPH DANIELS (Secretary of the Navy).

#### CANADA.

Under the heading of "Here's some news that we have missed," the "Calgary Herald" tells the following extraordinary yarn:—

Buffalo, May 27th.—Lieut. E. H. Bequer of the British Royal Flying Corps explained this morning the flight over Buffalo of an aeroplane seen by hundreds three months ago.

Lieut. Bequer admitted he had piloted the machine, starting at night from an English transport twenty miles off Long Island for his cross-country flight to Vancouver. He landed only once in the United States two hundred miles north-west of New York, because of engine trouble. He said he passed over Buffalo at a height of 3,000 feet, about daylight. His flight over Canada, made in four days, was uneventful, and his orders sealed the lips of Canadians at the few points where stops were made.

This absolute secrecy, he said, was to enable him to check the plot to bombard Vancouver from an aeroplane to be released from a German vessel in the Pacific. Secret service men, he declared, in the Canadian seaport unearthed the plot through conversation overheard among German citizens.

"I had been there three days," said Bequer, "waiting at my station on Vancouver Island for the threatened raid when the enemy's machine appeared and I went out to meet it. We clashed only thirty miles from Vancouver and both opened fire.

"They got me in the leg. That interfered to some extent with my manipulation of the controls, but we kept at it. When another bullet struck my abdomen, however, I was beaten and flew with all the speed of my machine, landing safely. The German machine turned back to sea as I approached land.

Bequer exhibited scars of his wounds. He arrived at the East Buffalo Stock Yards late last night with 605 horses for the British and French forces. After landing his horses in France, Bequer will rejoin the Flying Corps at the front.

Questioned closely as to the truth of his claims, Bequer showed his orders and copies of reports and declared censors had suppressed all details of the trip and his battle in the air.

"When the war started," he said, when asked about the mourning on his arm, "I had four brothers and two sisters. To-day, only my mother and I are left. My father, a retired officer, and brothers all fell—the last at Neuve Chapelle. Stray bullets got the girls, who were Red Cross nurses."

[In spite of all their alleged "cuteness," the denizens of the Western Hemisphere seem to be the most gullible people in the

world. Even a European News Agency would not have dared to perpetrate a story of this calibre. There is, of course, no Lieut. Bequer in the R.F.C.—Ed.]

#### AUSTRALIA.

From the "Melbourne Argus," May 3rd, 1915:—

Considerable additions are to be made at once to the aviation school at Point Cook, involving an expenditure of nearly £10,000. This will include a new double hangar, a hangar, and a slipway for waterplanes, quarters for a married man, and a garage. The work will be carried out by the Department for Home Affairs, a requisition having been received from the Defence Authorities, and will be pushed on as rapidly as possible.

#### THE INVASIONS OF ENGLAND.

The Secretary of the Admiralty issued the following announcement on June 16th:—

A Zeppelin visited the North-East Coast last evening and dropped bombs.

Some fires were started, but have been overcome.

Fifteen deaths are reported from the district and fifteen wounded.

At 11 p.m. the following further announcement was issued:—

Further inquiries show that the casualties in connection with the visit of a Zeppelin to the North-East Coast last night amount to 16 killed (including one policeman) and 40 injured.

It is now possible to state more exactly the casualties resulting from the airship raid on another portion of the North-East Coast on the night of June 6th.

The number of deaths is 24, namely, five men (all civilians), 13 women, and six children.

There were also forty cases of more or less serious injury.

The principal fires were in a drapery establishment, a timber yard, and a terrace of small houses.

[Much as one regrets the death of so many innocent people, especially women and children, one cannot help hoping that their martyrdom may help to bring home to the working classes in the North and Midlands the fact that England is really at war, and forms part of the war area.—Ed.]

\* \* \*

On June 17th inquests were held on the deaths of the victims of the North-East Coast Zeppelin raid on the night of June 15th. The evidence showed that the dropping of bombs in the area raided lasted for ten minutes, and that in one place bombs were dropped for six minutes. Some persons were killed instantly, and others died shortly afterwards.

\* \* \*

The Commissioner of the Metropolitan Police has addressed the following letter to the borough councils:—

It is reported that manifestations of public opinion have occurred in favour of the total extinction of the street lighting when warning is received of an impending attack by hostile aircraft. This matter was very carefully considered in the early stages of the war by the Admiralty.

The extinction of street lighting on the occasion of an air raid would be fraught with the most serious consequences, and would possibly bring about many more casualties than would be caused by the enemy aircraft. In the event of fire breaking out the fire brigade would not be able to reach their destination, the traffic actually in the street would be dangerously impeded, ambulance and police movements would also be hampered, and all the elements of panic would be introduced.

It is not, perhaps, generally known that numerous observations from the air have been made from time to time by the Admiralty, who are satisfied that the present system of reduced lighting is the most satisfactory, since an observer from the sky is quite unable to determine the quarter of London which he is passing over.

[An eminently sensible notice.—Ed.]

\* \* \*

As an example of the foundations on which some stories of airship raids are built up the following incident is worth telling. Some time ago a Naval pilot was flying late at night over a certain district not far from one of our Air Stations, and owing to engine stoppage he was compelled to come down the best way he could.



Having a bomb on board he very sensibly dropped it over the first piece of open ground he could see so as to avoid any possibility of auto-distribution should his course on landing be interrupted by extraneous agencies. What happened to the pilot afterwards need not perhaps be told, but the bomb, unlike the seeds in the parable, did not fall on stony ground, and it therefore failed to explode, with the result that the local farmer found it in the morning and immediately started out with the story that a Zeppelin had dropped a bomb on his field, presumably with a desire to destroy his growing crops. As a matter of fact the nearest Zeppelin was not much nearer than Belgium at that particular time.

### The Old Fallacies Again.

On Thursday last, June 17th, Mr. L. Blin Desbleds, some time lecturer at the Royal Military Academy, Woolwich, delivered a lecture at the Regent Street Polytechnic, in which he rode his pet hobby, the creation of a Ministry of Aeronautics.

The lecturer urged that such a step was urgently needed for the purpose of greatly increasing our aerial strength, and to organise a sustained aerial offensive which would bring to an end the present system of trench warfare, so desperately costly in the lives of men.

"We are not taking the fullest advantage," said Mr. Desbleds, "of the air power we possess. We are not producing all the machines we could, nor are we training all the pilots required."

"I want to protest against the statement in German despatches to the effect that recent air raids have been carried out in the spirit of retaliation. If that is really the case a great misuse is being made of a weapon of great offensive value. An aerial force can exercise its maximum direct influence by being an independent arm."

[All that has been discussed and its fallacies exposed over and over again in this paper.—Ed.]

Mr. Desbleds added that since the outbreak of hostilities Zeppelin sheds and a hydrogen factory had been established on Heligoland. The war radius, he believed, of a Zeppelin was 300 miles, allowing a journey of 600 miles in all. With the effective anti-aircraft organisation now existing here, he did not think a Zeppelin from Heligoland could reach the Thames estuary or London. Those which visited that district came from the sheds at Brussels, 190 miles from London.

### THE HOUSE OF COMMONS AND AIRCRAFT.

Speaking in the House of Commons on the Report of the Supplementary Vote of Credit,

Mr. JOYNSON-HICKS (Brentford, U.) said he desired to call attention to the insufficiency of the number of aeroplanes for war service by sea and land. It was quite clear from the report of Field-Marshal Sir John French that our airmen were superior to the German airmen, but it was also quite clear that the Commander-in-Chief could have done with the assistance of a larger number of aeroplanes than he had had at his service since the war began.

From information brought home by wounded officers it appeared that at many parts of our line enemy aeroplanes were more numerous than our own. He had heard of no fewer than eight German aeroplanes circulating over a part of our line where there were none of our airmen, with the result that a vast quantity of high explosives was poured on our trenches. If that were so, he thought they were entitled to ask the Minister of Munitions to give the Army not only more shells but more aeroplanes and airmen.

The aeroplanes were also required to assist in repelling Zeppelin raids at home. It was clear that the people of London must expect a Zeppelin raid within the next few weeks. Quite recently there were over our coasts no fewer than five Zeppelins of the latest type. To meet those Zeppelins we required not a few aeroplanes, but what the Chancellor of the Duchy called a swarm of hornets.

We wanted larger aeroplanes capable of carrying large bombs. Instead of having one raid upon Cuxhaven there ought to be a raid every week into German territory, and in view of the attacks made by Germany upon undefended seaports and the murder of undefended citizens, he would not be too particular as to upon what German towns bombs descended.

In Russia they had an aeroplane carrying five motors of 100 h.p., 121 ft. across from tip to tip of the wings, and capable of carrying 16 men. A machine of this type—and there was no reason why we should not have many of them—would be capable of carrying four or five bombs, having 400 lb. or 500 lb. of high explosives. Both the Army and Navy would know how to make use of them. These machines could be turned out in less than three months.

If the Minister of Munitions would take counsel with the heads of the Army and Navy air services they would tell him



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they could employ three or four times as many aeroplanes as they had. This matter was as important, in his opinion, as the provision of high-explosive shells.

Mr. TENNANT agreed with the description of our "airmen" as perfect. The criticism that more men and more material were wanted might be made of the artillery or infantry as well as the air service. It might be said with truth, "The pity is we had no more." The air service was now, however, in a very good proportion indeed to the rest of the Army.

Since the outbreak of the war the expansion of the air service had not been less in proportion than that of the rest of the Army. The expansion of pilots had been in the ratio of 10 to 1. Where we had one before we had now 10. The expansion of men engaged in the air service generally was in the proportion of 5 to 1. This was a very large expansion indeed. In spite of that expansion the organisation which had been set up was working harmoniously and smoothly, and he thought with great efficiency.

It had been stated that there was a deficiency of high-explosive bombs for use at the front. He could not say whether there had been cases of a shortage of high-explosive bombs, but there had been no shortage of such bombs since February. (An hon. member—"Not shells?") At the present moment there was an ample supply with an ample reserve. He hoped that statement would reassure hon. gentlemen in all quarters of the House.

The Government had actually in process of manufacture similar machines to the larger Russian aeroplane to which attention had been drawn.

At the moment of mobilisation only the Central Flying School existed in this country. It could only train 20 pupils at once. Now there were 11 schools which could train upwards of 200 pupils.

\* \* \*

It is eminently satisfactory to see that Coalition in the Ministry does not mean that all criticism is to be burked. Mr. Joynton-Hicks has in the past done more than any member of Parliament to force the hand of the War Office in the matter of aircraft, and one is glad to see him exposing the attempt to "dope" the public into the belief that all is for the best in this best of possible Governments.

Incidentally, one must not confuse two of his statements. He says that we want a "swarm" of aeroplanes against Zeppelins, and that we want larger aeroplanes. One takes it that he does not mean that the larger aeroplanes are for use against Zeppelins.

As to raids on Cuxhaven once a week—taking it that he means raids on the North-West German coast generally—one can cordially agree. Our seaplane-carrier flotillas have done very good work, but like our Army aircraft, there are not enough of them.

As for Mr. Tennant, he is a worthy disciple of Colonel Seely (T.F.; Temp. Brig.-Gen.). Assuming that the 35 aeroplanes which were by an effort put into the air at Netheravon during the Concentration Camp in June last year, doubtless much to the amusement of the German and Austrian military attachés who were present, were enough for the Expeditionary Force, doubtless the present number is in proportion to the present army. But that, as usual with Colonel Seely, is begging the question. It is not a question of theoretical proportion, but of actual number needed for use. And Mr. Lloyd George—who is worth a dozen Seelys and Tennants together—says we want more aeroplanes.

One cannot help alluding to Mr. Tennant's unfortunate phrase about the "expansion" of pilots and men. Certainly the R.F.C. tunic when seen in side elevation does give an impression of embonpoint, but hardly to the figure mentioned.

It is interesting to hear officially that big aeroplanes are being built. The subject is not a new one in this paper, which has an unhappy knack of anticipating Officialdom by anything between a year and three years. Unfortunately Germany has, in the past, adopted with good effect all the suggestions made in this paper and ignored by our own Services.

It is interesting also to hear that there are eleven schools in this country. Presumably for Parliamentary purposes Naval and the formerly despised civilian schools are counted as

sources of supply by the War Office. Also, the writer's personal recollections of the C.F.S., when it was inspected by various officers of foreign nations, is that there were nearer 40 than 20 pupils at work.

Some few weeks ago the Deputy Director of Military Aeronautics, speaking at the Annual Meeting of the Aeronautical Society, referred to the fact that it was now necessary for us to send up two aeroplanes at a time, one of them to reconnoitre and one to beat off any German machine which might attack the reconnaissance machine.

One learns from various sources that the Germans have recently put into the air a huge fighting machine very similar to the Italian Caproni biplane, which was described and illustrated in this paper some months ago. This new German machine is said to have two fuselages and three engines, and to be terrifically fast, so fast indeed that when one of our own machines, which happened to be well up in the air when it came out over our lines, attempted to attack it from above, it simply opened out its engines and went right away from the British machine until it reached a position more agreeable to its crew.

In view of these interesting facts the following extract from THE AEROPLANE of May 28th, 1914, may be of interest:—

'Meantime all the good constructors are busy making 'B.E.'s,' an obsolete type of machine with an antiquated type of engine. I wonder what they will do when no more 'B.E.'s are wanted. . . . The wise thing for them to do under the circumstances would be to set to work to build a bigger and better and more stable machine than the 'R.E.,' for no one has yet produced a decent fighting machine as a reply to the fast 'reconnaissance' type. The fighting machine should be, for choice, of a design with two separate engines, for the good reasons so often put forward by General Henderson. Also, they should experiment seriously with air-brakes and land-brakes.

'Being in a prophetic mood, let me hazard a guess that the fighting machine to beat off the 'R.E.' will be a propeller-driven biplane having a fuselage with an engine of about 120-h.p. on each side of it, each engine driving a separate propeller, more or less like a Sikorsky, and each engine capable alone of flying the machine. It will be inherently stable. It will have proper air-brakes.

'I know personally of three men, none of whom is doing designing work at present, who could design such a machine and have it in the air in six months from now, given proper workshop facilities, so surely the combined brains of the designing staff of any one of our big firms should be able to beat them on time if nothing else. I only hope they will for that is the only way in which the 'trade' can hit back."

Those fighting machines might easily have been in the air by October, 1914. We have still to hear of such a machine being in use on active service. Why?—C. G. G.

#### A "Volunteer Watch."

A body formed from the male inhabitants for the purpose of patrolling the roads at night has been formed at Southend. Each road provides its own patrols and is "watched" every night between 10.30 p.m. and 2.30 a.m.

The scheme is said to have produced a feeling of security, as the inhabitants know that they will be awakened in good time (by a pre-arranged signal) in the event of hostile aircraft being in the vicinity.

The chief drawback to this arrangement, which has been tried in several localities, is that it entails an enormous amount of extra work both on the Regular and Special Constabulary. As a rule two or three nights a week an entirely unfounded rumour of Zeppelins germinates in the "protected" district, the "Watch" digs everybody out of bed, and the over-worked Police have to be mobilised and occupy themselves till daylight in persuading thousands of quaking citizens (generally of the type who sneer at any young male consumptive whom they happen to meet for not enlisting) to go back to their beds. The best place for people during air raids is indoors. If they are forewarned they are bound to flock out into the streets in thousands, and though any injuries they may receive outside may be attributed to their own fault it is not desirable, for many reasons, that the German "bag" should be augmented.

**Aero-motors: In Kind and Construction.—(Continued)**

BY GEOFFREY de HOLDEN-STONE.

**Polite Letter-Writing.**

Conferences—at Storey's Gate and elsewhere—are polite assemblies held with the object of discovering all that the other man doesn't know about the subject, at the price of a vote of thanks. That is why they are so successful in getting no further; such a popular scientific amusement for winter evenings. Only just now we are so busy with realities, with the sheer necessity of getting as much further as we can, as soon as possible, or rather quicker, that we have no time for them. So, since we are all agreed to do our bit, the first to hand—and to pool our mites of knowledge, it occurs to me that the really useful and kindly thing for pilots, and still more his Majesty's gentlemen-at-arms in charge of aeromotor supply depots would be to write direct to the motor makers, to cheer them up with their personal opinions and experiences as follows:—

"Dear Mr. Blank,—

Not having had the pleasure of meeting you, will you accept my regrets for having had to meet your motor? actually in serial parts, daily. Never, in all my experience as deputy sales-manager for Tyburnia Motors, Limited—who, you may remember, supply any make of aeroplane—have I seen anything like it. We used to see all sorts at our place, and you will admit that, consequentially with my experience, I ought to know all about motors: but, really, yours is the hyperaemic limit, as we used to say at dear old Gower Street. So far as I can see, it suffers from general diffused metallic perityphilitis—due, doubtless, to its obviously hasty finish in these parts, coupled with excess of aluminium in the structural system—alternately with intermittent lymphatic embolism and irregular periods. Also, apart from the liability to Potts' fracture arising from the diametral tenacity of the wrist-pins—or possibly from earlier indiscretions—I notice traces of mitral regurgitation in the exhaust valves and a tendency to spasmodic paresis of the left spheroid gland. Strong indications likewise exist of both postcephalic and cerebral inflammation supervening upon defective circulation after brief periods of normal exercise. We have tried curetting, Alexander's operation, and the removal of superficial growths, with only partial success; and, therefore, propose to try complete ablation of the carburetter to-morrow, subject to your own and the patient's consent.

Oh, Algernon, how could you?

"Yours,

"George A. Montmorency-Jones,  
"R.N.R. Lieut. (temp.) in charge  
H.M. Ordnance Works, Binks Lane,  
Woolwich."

Or this way:—

"Sir,—Yours is some great motor, I opine, in the laundry business, judging from the way it splashes the water around, but you gotter nother guess coming if you reckon it's going to make good as a cloud-climber. Say, you wanten get a line on some of the styles away over at the Chowder Hot Air Engine Corporation, West Syracuse, N.J., on this stunt.

"I am yours,

"Silas K. Sprotts (of Indiana, U.S.)

"(Pilot 0131 Royal Flying Corps)."

— Depot (deleted by Censor).

Or even thus:—

"Dear Sir,—With regard to the probable—or even potential—aerodynamic efficiencies of your motor—Series H<sub>2</sub> NO—it occurs to me from my experience as chief designer to Sprawls-Choice, Ltd., that if, as in your correlation of the periodicity of the cam-action during any extreme variation of secondary gearing r.p.m., you take the following:—

$$\frac{m(\theta + nh) \cos.(a - \phi)}{n \left( bl - \frac{am}{nbg} \right)}$$

then the result must be  $\theta(h_2 - 1) \sin \theta + \phi = nbg_2$ ; which, as I said before, would probably coincide with the firing moment unfavourably during any such variation. Do you not agree?

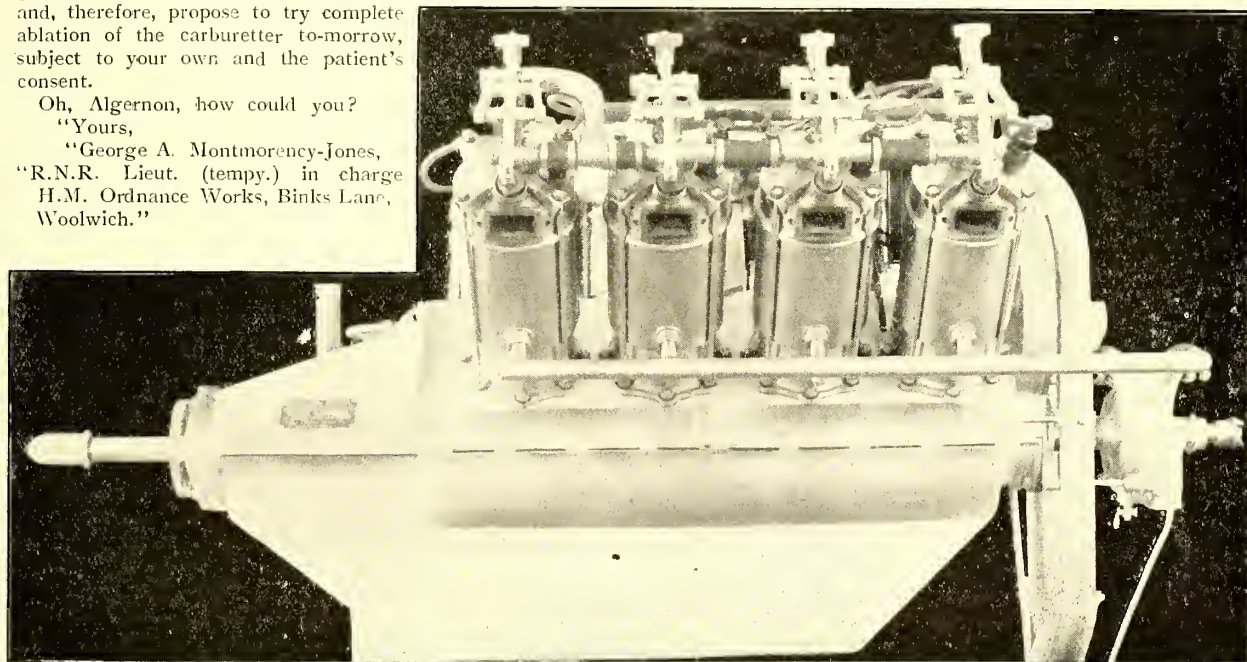
"Yours faithfully,

"Arthur Merriman, B.Sc.

"(Temp. Lieut. R.F.C. Depot, Blankshire)."

**And Its Effect.**

Little encouragements of this kind would, I am sure, not only cheer up the average designer of aeromotors—who hourly expects his works and all that therein is, to be commandeered for making wagon axles or shells—no end, but might help him to discover the sore spots and weaknesses of his best-beloved creations which somehow didn't show on the test-bench. They might even provoke him to issue a book of instructions explaining that they were intended to be used as aeromotors,



The 90-h.p. Curtiss Aero-motor, at present being supplied in large quantities for War Service.



not lawnmowers, and how to do it that way, and not the other, to give them a chance. And finally, his replies and explanations why he made things just so, and his patient instructions might enable his intelligent young critics in the British Flying Services to glimpse the idea of the fact that all their experience with common car-motors of Olympic breed does not really qualify them to know—really know—much more than .001 of the possibilities of motor design and practice.

This far-off divine event might even put them back to school to the fundamentals of motor-invention: to considering the motor-proposition as it is; nothing more than a piston with a smooth pot to put it in, and a crank behind it; and, for the rest, anything you choose to add to it *in your own way*. Licensed, nevertheless, of your craft, "for what you think you may require, to go and take, the same as me"; for with brushes and paints, bits and pieces, materials and parts, all in the common stock for the common use, the master creation is as much the result of original treatment as of original conception, *de novo*.

#### The Curtiss Aero-Motor.

Such reflections, anyhow, are bred of the impression one gets of the Curtiss V-type motor. Like the most remarkable of American cars ever designed—that stands up to rougher use over worse tracks than any other, though its back axle looks as if it were made of tin—it looks extraordinarily frail. Yet it stands up to incredible work, as Eastchurch and other British tests have proved, quite apart from the performances of numerous Trans-Atlantic celebrities who part their names in the middle, for greater lateral stability. In fact, if you consider the utter mediocrity—not to say inferiority—of the average American aeroplane, it seems more likely than ever that the undoubted merit of these feats was at least four-fifths due to the Curtiss motors that showed therein. Certainly the motor looks, and any blind man would say feels, as if it were made of tin. Would for the aeromotor outlook that it were; or that such tin were available. But its cylinders have not even needed to be made of steel, for lightness sake; only of cast-iron, jacketed with welded Monel metal—whatever that useful alloy may be—while the rest, with the exception of the valve-gear—seems to be mostly aluminium. Which it is; everywhere it may safely be. And since lightness is at least no defect in an aeromotor, pray why not?

#### Salient Details.

Frankly, too, its general design professes to be nothing more than a combination of the best considered details of practice. But so original is that combination that it almost realises one's ideals for the V-type. Accustomed as we are latterly to the smooth, cleannesses and compactness of the monobloc, we may look askance at monocylindric practice. But it is only the combination of this system, with colonnette bolting for attachment—the school wherein Anzani and others scored their earlier triumphs—that enables the cylinders to be so light, yet still be cast-iron; and to that degree of safety, that with the spider-yoke attachment above into which these colonnettes are set, cylinder breakage becomes nearly impossible. The twelve nickel steel stud bolts merely tack the cylinder to the crank-chamber, and take no particular stress, except perhaps the internal side thrusts; certainly none of the combustion stresses. The spider-yokes especially look as if they were made of tin. Actually, they are of thin steel plate; but so stamped into rectangular channels on each arm of the yoke, that they are as strong as if they were solid, at about one-tenth the weight.

In a fashion quite unique, too, the Curtiss design realises at last one's pet aeromotor propriety. When you want to tickle a carburetter, you ought not to go into the street to do it.

Decency seems to forbid. But with the said joy-pot neatly mounted behind, it can be attended to, in the privacy of the aeroplane within arm's length of the pilot.

On the other hand, in the matter of bearings, we come at once to opposed schools of practice, the American way and our own. We, having turned our brasses, or run in our bearing-metal, go to work for hours with scraper and indigo, and then with scraper and our own breath or a wet finger, until we have the surfaces absolutely circular in section, wholly pin-fast until the oil gets in, while the upper and lower faces of the big ends or bearing blocks are in dead contact all over. That is the Job, as we understand it. The American way is simply to cast the bearings true, but several degrees short of a semi-circle, and to pack up with shims or flat plates from 1-16th to half a thousandth thick, between the big end or bearing block faces. The result, when finished, looks utterly abominable. But it runs just as well, wears, and stays put as long. Also it is cheap, and takes about one-tenth of the time. Cunning, immoral, uncraftsmanlike, as it doesn't show. But as I said, it is the American way; and, on results, is no worse than our own.

As a set-off, however, I am bound to say that I have seen no Europe-built motor with such an absolute, sure-enough, must-be leak-proof piston ring as the Curtiss possesses. Yet it is composed of nothing more than two plain rectangular split rings opposed, yet married up as one.

*To be continued.*

#### The New Propeller.

As was recently stated in this paper, the Eboria Propeller Company of Kingston-on-Thames has been experimenting for some time with a propeller of an entirely new type, Pt. App. No. 7748/15, the design of which was based on aerodynamical experiments in various laboratories in this country and abroad. It is gratifying to hear that their work has been a great success and that they are now in a position to build propellers in any quantity required in their new works at Bishopshall, Thames Street, Kingston-on-Thames.

As all the propellers are being built under the supervision of the works manager, Mr. John P. Carter, who is well known as formerly chief propeller constructor to Mr. A. V. Roe in the early days and more recently to the Grahame-White Aviation Co., and who also was concerned with the construction of the famous hydro-aeroplane with which the Sopwith Aviation Company, Ltd., won the Schneider Cup for England, it is practically certain that all the propellers delivered by the Eboria Propeller Co. will be of the highest possible workmanship and finish.

One learns that the design is due to the technical manager, Mr. Jan Schiere, A.F.Aë.S., a Dutch aeronautical engineer with five years' experience in the design and construction of aeroplanes and airships.

The above is sufficient proof that the Eboria Propeller Co. is intent on securing a good name among the aircraft companies in this country. Already their propellers are used by some of the best firms in England, and one would not at all be surprised to see the "Eboria" become one of the standard propellers for the leading aeroplane types of Great Britain.

Those who would like to hear more about the company should note that their telephone is now "Kingston 672," and their telegraphic address, "Eboria, Kingston."

#### THE WEEK-END AT HENDON.

The weather at Hendon was very pleasant, and the bright sunshine drew good crowds to the Aerodrome, both on Saturday and Sunday. The air was extremely bumpy on Saturday, and up to 2 o'clock the only pilot carrying passengers was Mr.

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J. H. Moore, who is fast acquiring a reputation for steady and careful flying. He made many journeys on his L. and P. Caudron, and drew favourable comment from many of the older pilots.

Mr. Osipenko was out early on a G.-W. biplane. Messrs. Manton and Winter were also busy on similar machines. Mr. Roche-Kelly gave several exhibitions on a 50-h.p. Beatty-Wright, with and without passengers. He has a complete mastery over this machine, and his flying becomes more and more interesting to watch. Mr. Prodder was out on a 60-h.p. Beatty-Wright, while Mr. Baumann made several flights on a Ruffy-Baumann Caudron.

The most notable event of the afternoon was the appearance of Mr. Rowland Ding on a new machine built by the Blackburn Company and intended for active service. He took up Mr. M. D. Manton, who during his long career as an aviator has rarely occupied the passenger seat in any machine. Mr. Ding gave a really remarkable exhibition of flying, and while he modestly gives much of the credit to the machine, there can

be no doubt as to the ability he displayed. Mr. Manton, who may shortly be engaged in testing similar machines, expressed himself as delighted with the behaviour of the machine. Mr. Ding afterwards made a fine flight of over an hour's duration, reaching a height of somewhere about 10,000 feet.

On Sunday it was at first quite calm after lunch, but a light wind arose later which made things more interesting, without in any way interfering with passenger carrying. Messrs. Manton and Winter took up many visitors on G.-W. biplanes, and Mr. Osipenko made various personally-conducted tours aloft on the five-seater, which seemed to be pulling a little better. Mr. Roche-Kelly again flew well on a 50-h.p. Beatty-Wright, while Mr. Johnston brought out the 45-h.p. Beatty-Caudron.

Mr. J. L. Hall made one straight on his fuselage Caudron, which had been undergoing a little readjustment during the week, but as it was not yet right he went for a long flight on a 45 Caudron. Messrs. Baumann and Virgilio flew Caudrons from the Ruffy-Baumann school.

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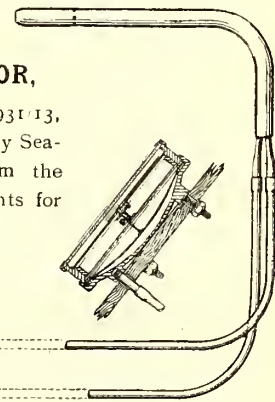
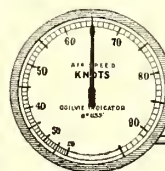
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Flying went on without interruption all the afternoon, and there were generally three or four machines in the air at a time. Caudrons seem to predominate at Hendon at present.

In the Ruffy-Baumann sheds the writer saw a new 50 Gnome two-seater Caudron almost ready to be placed on the active list, while two more are under construction for the same school. The Mann and Grimmer biplane returned to the aerodrome on Saturday and is housed in a marquee erected in the long grass near the Hall School. A competition between this machine and the Reo would be full of interest.—D. W. T.

### School and Weather Reports.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
East Coast ...	Fine Windy	Fine Windy	Fine Windy	Fine Windy	Fine Windy	Fine Windy	Fine Windy
Hendon ...	Windy	Windy	Fair	Fair	Very Windy	Fair	Fair

**Hendon.**—AT THE BEATTY SCHOOL OF FLYING, LTD.—Instructors for the week: Messrs. G. W. Beatty, W. Rochekelly, C. B. Prodger and P. A. Johnston. Pupils with instr.: Messrs. Arbon (8), Banks (14), Bond (21), Chalmers (43), Delves (18), Fawcett (5), FitzHerbert (15), Fox (7), Holland (15), King (10), Morgan (15), Ross (10), Rutherford (6), Spicer (14), Tomlinson (23), Vickers (16), Whincup (6), Boyle (10) and Kenworthy (141). On Wednesday evening, in spite of the fact that the weather was very unfavourable for certificate flying, Mr. G. K. Blandy took an extremely good ticket on the 45-h.p. Caudron; he is now taking extra practice at the school. Machines: Beatty-Wright dual-control and single-seater propeller biplanes, Caudron tractor biplanes. Mr. Kenworthy put in 2 hrs. 20 mins. extra practice during the week, flying very consistently, his altitude ranging from 2,000 to 4,000 ft. Exhibition flights were given on 3 machines on Thursday, Saturday and Sunday, also 3 passenger flights were taken.

AT THE HALL FLYING SCHOOL.—With instructors Herbert James and C. M. Hill: Messrs. Gay, Millbourne, Lieut. Grant, Mr. Snowden, Mr. Gordon, Mr. Yonge, Lieut. Phillpotts, Mr. Hatchman and Mr. C. H. Bell. With instructor H. F. Stevens: Lieut. Raymond-Barker making very good straight flights, Messrs. Snook and Furlong progressing well with half circuits, Mr. Mitchell straights. Fifteen passenger flights were made with Mr. H. F. Stevens by Mr. Richardson. Machines: Hall tractor biplanes.

AT THE RUFFY-BAUMANN SCHOOL.—Instructors for the week: Messrs. Edouard Baumann, Felix Ruffy, Gino Virgilio, and Clarence Winchester. Pupils with instr.: Messrs. Mathewson (5 mins.), MacBeane (8), Crawford (20), Robertson (10), Perrins (6), Balfour (43), Wilson (25), Boisson (5), Cole (24), Sykes (26), Brand (10), Fenning (11), England (22), Wallis (13) and May (6). Strts. or rolling alone: Messrs. Cole (18), Bell (16) and Dixon (10). 8's or circs. alone: Messrs. Hudson (7) and Bell (40); latter pupil ready for ticket which he should take before these notes actually appear. Machines: 50-h.p. Caudron type, 60-h.p. Ruffy-Baumann biplane. Several passengers have been carried during the week, including members of the gentler sex, and a great deal of constructional work has been carried out by a few of the more energetic pupils in the erecting of a new 50-h.p. biplane.

AT THE GRAHAME-WHITE SCHOOL.—Instructors for the week: Messrs. Manton, Russell and Winter. Pupils with instr.: Prob. Flt. Sub-Lieuts. Roach-Pierson, Hardman, Pearson, Sievking and Watkins. 8's or circs. alone: Prob. Flt. Sub-Lieuts. Cadbury and Linnell. Certificates were taken by Prob. Flt. Sub-Lieuts. Cadbury and Linnell. Machines: Grahame-White biplanes.

AT LONDON AND PROVINCIAL AVIATION CO.'S SCHOOL.—Instructors for the week: Messrs. W. D. Smiles, M. G. Smiles and W. R. Warren. Pupils doing strts. or rolling alone: Messrs. Irwing, Wattine, Dower, Minter, Jacques and Nethersole. Straights: Messrs. Sykes, Scott, Wood, Adams, Pullinger and McOnie rolling. 8's or circs. alone: Messrs. Irwing and Nethersole circs. and half-circs. Mr. Nethersole 8's and practising landing on the mark. Machines: Three L. and P. tractor biplanes. On Tuesday Mr. M. G. Smiles climbed to 6,500 ft. on the new L. and P. 40-h.p. machine, a very fine performance.

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### PATENTS.

#### ANDREWS BRITISH PATENT

No. 11332 of 1910.

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Further particulars from PHILIP M. JUSTICE, 55, Chancery Lane, London, W.C.

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Copies of the patent specifications and full particulars can be obtained from and offers made (for transmission to the owner) to MARKS & CLERK, 57 and 58, Lincoln's Inn Fields, London, W.C.

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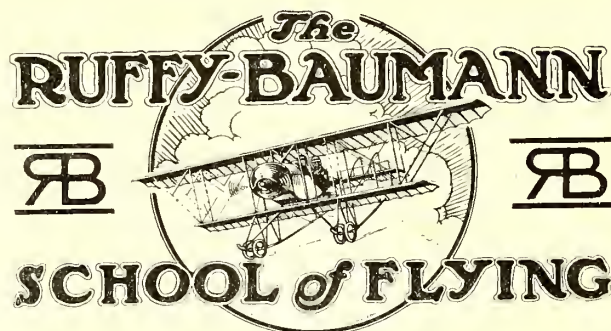
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"THE AEROPLANE," JUNE 30TH, 1915

# THE AEROPLANE

1D  
WEEKLY

Edited by C. G. GREY. ("Aero-Amateur")

VOL. VIII. [REGISTERED AT THE G.P.O.  
AS A NEWSPAPER.] WEDNESDAY, JUNE 30, 1915.

No. 26

## "SOMEWHERE IN FLANDERS"



No. 1 ROYAL NAVAL AEROPLANE WING.—Left to right, Top Row: Sub. Lt. Ogston, Flt. Lt. Huskisson, R.N., Lt. Cameron, Flt. Sub-Lt. Graham, R.N., Lt. Nutting, Surg. Anderson, R.N., Sub-Lt. Jones, Sub-Lt. Rose, Lt. Villiers, Sub-Lt. Peal.

Middle Row: Flt. Lt. Evill, R.N., Sq.-Commr. Bigsworth, R.N., Wing-Commr. Longmore, R.N., Lt.-Commr. Chilcott, R.N.V.R., Flt. Lt. Dyott, R.N.

Front Row: Flt. Sub-Lt. Mills, R.N., the late Flt. Sub-Lt. Warneford, V.C., R.N., Flt. Lt. Wilson, R.N.





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## On Armoured Car Support.

Every now and then a respectable daily paper breaks out and allows itself to be so unusual as to suggest that everything done by the Services is not as perfect as it might be. One day recently the "Morning Post" even ventured to question the economy of Service Expenditure, and in referring to the Navy delivered itself of the following criticism—a most daring effort for any editor who lives in daily dread of the vagaries of the Censorship:—

"... we are certain that if we were to inquire into naval expenditure we should find that even there money was squandered, because in some respects the peace establishment was not sufficient. Thus, for example, a fancy armed motor-car service was improvised after war began, which cost a vast sum of money—although what armoured motor-cars can have to do with the sea we have never been able to ascertain."

This is rather an unkind reference to the "Ocean-going Cavalry," or the "Petrol Hussars," or the "Motor Bandits," as the Armoured Car Division, R.N.A.S., is variously nicknamed by those who cannot afford Rolls-Royces, for, in fact, a portion of that somewhat curiously constituted force has done rather good work abroad, and has great possibilities for the future, so it may, perhaps, be of some interest to trace how the Motor Bandits came into existence.

It will be remembered that while the British Army, and with it the Royal Flying Corps, was busy being saved by Sir Horace Smith-Dorrien from complete disintegration during the retreat from Mons, some few of the land-going aeroplanes of the Royal Naval Air Service were rushed across to Belgium and located first at Ostend, and later at Dunkirk. The idea, presumably, was to keep an eye on the main movements of German troops in Belgium.

Apparently, a certain amount of scouting was done, though, as the pilots and observers were either sailors or civilians, and not soldiers trained as military observers, it does not seem that much information of high military value was acquired, which probably accounts for a squadron of the R.F.C. being sent to Ostend in the autumn just in time to "assist"—in the French sense—at the Belgian retreat from Antwerp into France.

However, the R.N.A.S. detachment included some excellent fighting men who seemed really to enjoy scrapping for scrapping's sake, and during the early part of their stay they got into the habit of making forays into and over the country held by the Germans. About this time—that is to say, before the capture of Antwerp—a number of Belgian sportsmen, of whom the best known was the Baron de Caters, ex-driver of racing cars and a certificated aviator, were doing a considerable amount of odds and ends of damage to German soldiery by sporadic raids with armoured motor-cars carrying machine-guns. Until then, no one had regarded armoured cars as possible serious weapons of war.

This form of sport instantly appealed to the R.N.A.S. people, who forthwith demanded that they also should have armoured cars, pointing out the value of these vehicles as "support" for aeroplanes, in that aero-

planes which went out on a raid could be supported by armoured cars which would either co-operate with them in attacking a given spot, or could arrange to meet them at pre-arranged places in the event of the aeroplane breaking down.

Also, it was argued with good, sound reason that aeroplanes could go out and find raiding parties of enemy troops, and could either return to or signal to the armoured cars, which would then proceed to the spot and wipe out the aforesaid enemy.

### The Early Raiders.

In actual practice the scheme worked quite reasonably well. Several armoured cars were hastily rigged up and sent out, and, in the words of the News Agencies, "made innumerable dashes through the German lines." Some damage was done, a few Uhlans were killed, sundry Iron Crosses were acquired as souvenirs, and, perhaps, a D.S.O. or two as rewards, but the actual effect on general operations was very nearly negligible, and a number of highly skilled and expensively trained aeroplane pilots, including, particularly, one officer of Marines, who built and organised about the most perfectly run and disciplined Air Station I have ever seen, were wasted by being turned into "petrol pirates," when, if they had been linked up direct to the then short-handed and over-worked R.F.C., and had carried trained military observers, their very great skill would have been of the highest possible value. The good work done by the little detachment of Naval aeroplanes commanded by another smart young officer of Marines and attached to the White Army during the manoeuvres of 1913 showed that such an arrangement is practicable.

As it was, beyond carrying on a policy of pin-pricks which occasionally annoyed local inhabitants as well as Bosches, no real results were obtained by the R.N.A.S. until the air raids into Germany, curiously enough also organised and commanded by an officer of Marines, definitely destroyed an airship and gave the German nation quite an unpleasant moral shock.

### The Need for Numbers.

The failure of the motor bandits to do anything of military value was, of course, due to the fact that there were not enough of them. If there had been a thousand armoured cars co-operating with aeroplane scouts in Belgium within a month of the outbreak of war the German advance might have been held up for quite a considerable time, and the Anglo-French Army, with General Foch's new Army from the South, might have held the line of the Aisne, though whether that would have made any material difference is doubtful, for the German line of trenches would still have been just about where it is.

It is, however, fairly certain that a few hundreds of armoured cars guided by aeroplanes to the vital spots would have saved a good many thousands of our infantry, and probably a number of our guns during the open fighting in which Sir Horace Smith-Dorrien so gallantly and skilfully extricated a large proportion of the troops which seemed destined to be sacrificed in saving the bulk of our retreating Army.



These things were seen and appreciated, and on the face of it anyone would have judged that aeroplanes with armoured car support would be of the very greatest value. And so they would be if the Continent of Europe were larger so that it would be impossible for the Germans to entrench from the sea to Switzerland. As it is, there are those rows of ditches across which no motor-car can jump.

There is a wholly untrue yarn going about concerning the purchase of cars for the R.N.A.S., which deserves telling, simply as an example of the fervid imagination of the Navy. It tells how a very highly placed officer at the Admiralty, being desirous of acquiring a car of the very best type for semi-service use called on one of the first rank motor firms and explained that he could not afford £1,500 or so for a car, but would like to hire one for a period if reasonable terms could be arranged. To him the immaculate salesman, who had already done much trade with the R.N.A.S. replied: "But why hire one! The Air Department will buy it for you if you really want one."

As a matter of fact, there are quite a number of R.N.A.S. officers of some importance who would like cars for their own use, but only officers of the rank of squadron-commander are supposed to have them. Probably the number of squadron-commanders may account for the quantity of R.N.A.S. cars one sees about.

#### Germany's Weakness.

So far as mechanically propelled vehicles are concerned, I still hold, as I said months and months ago, that the whole of this trench warfare can be broken up by purely mechanical means; but, of course, no one will believe it till they see the machines trundling towards our own lines from Germany. Whether it will be possible to get German infantry to follow through the holes made by these machines is quite another matter, and that is probably just where the German plans will break down.

An aviator who was very much on the spot when the Germans first attacked with gas to the north-east of Ypres, tells me that although the Germans did make some advance, it was nothing to what they might have done, for there was a period when they could have walked right into Ypres with their hands in their pockets for all there was to stop them, and, apparently, the reason they failed to do so was simply that the men would not go forward, either for fear of mines or for fear of being ambushed. If they could not be induced to advance rapidly over ground which had been swept clear of live enemies by poison-gas, it seems possible that they would be still more difficult to drive to attack through lanes made by mechanical means in our defences.

The unwillingness of German infantry to attack unless supported by some unusual scientific contrivance seems to be fairly sufficiently proved, at any rate, so far as those at present holding the Western Front are concerned. Whether it will be the same thing when the masses of troops which have been carrying on a victorious march through Galicia return to the West remains to be seen. Of course, we know that the Russians were not defeated at Przemysl and at Lemberg—presumably it is now correct to call it Lemberg again and to leave off its Russian name Lvoff or Lwow—spell it as you like, it looks humorous—and that they were only straightening their line, or occupying fresh positions from which to break the force of the German attack, or shortening their lines of communication, or lengthening the enemy's line of supply, or "recoiling the better to jump"—as the French say, but looking at it from the German point of view with a German's well-trained eyes and with a German's patriotic faith, it must look very much like a "kolossal" victory, and so long as it looks so to the Germans, the spirit with which their troops are bound to be uplifted is distinctly a force with which we have to reckon.

#### The Next Attack.

That being so, we may expect before very long—that is to say, as soon as the Germans can organise their new Eastern Front, and can bring their best veteran troops back to the West Front—a terrific attack in France. It may not be in Flanders, it may be in Alsace or in the Champagne, or in the Amiens district. Still, that attack is bound to come. And it is just there that armed and armoured cars may be most useful.

If the Germans threaten to break through at any particular point, and if air scouts, with properly experienced observers, confirm that it is a real attack and not merely a feint, squadrons of armed cars can be moved to support that point far more quickly than any other form of defensive apparatus. In this dry weather they can manœuvre over fields—and even in wet weather they could be driven almost anywhere with the aid of "spade-chains" on the tyres, if the Admiralty has had the foresight so to equip them.

We have already learned officially from the Germans what was obvious before the war to anyone of moderate intelligence, namely, that against attacking troops machine-guns are worth whole regiments of first-class shots armed with match rifles, and armoured cars with a couple of machine-guns apiece are about the most useful things imaginable, for their mobility makes them a difficult mark for artillery firing more or less by the map, and also enables them to shift quickly to the positions whence they can do most execution.

Under such conditions their allied aircraft can only be an assistance to them by spotting whence an attack is probable and by dropping bombs during the actual attack. In a car brigade, organised with a little time to spare and not in a rush, each squadron of cars would have a "wireless" and field telephone wagon with it which would receive the reports of the aeroplane observers, and from which the commanding officer would direct the position to be taken up by the various sections of his squadron.

One hopes that the Motor Bandits have during the past few months had regular and properly organised work out in the country in co-operation with aeroplanes. One sees a great deal of them and their cars haring about the roads, so there are evidently plenty of them, but one naturally hears little of their practice in co-operating with aircraft. Doubtless their efficiency in such work is as high as is that of the rest of the R.N.A.S.

#### When the Time Comes.

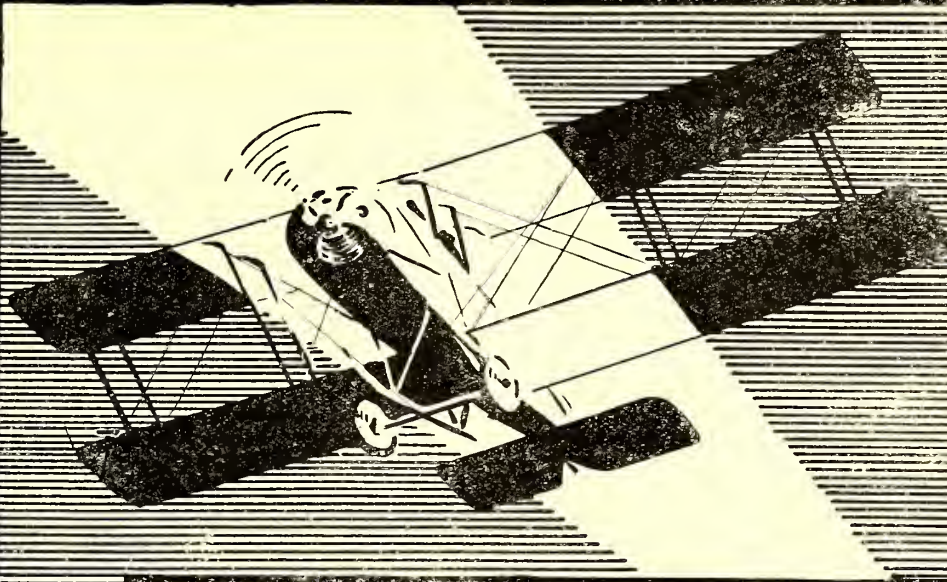
As to the future—when the German line breaks, and it is possible to penetrate into country which is not criss-crossed with trenches every few yards, the armoured cars should be of the greatest value in pressing forward to force on rearguard actions, and in rounding up isolated parties of troops, which air scouts have located. For such work, as for the other already discussed, each squadron of cars should have about half a dozen aeroplanes permanently attached to it, complete with motor transport under a flight-commander.

Also, for home defence, similar combinations would be of the very highest value in repelling any possible invasion. In fact, over our splendid system of coastal roads a squadron of armoured cars would be worth a couple of battalions of infantry simply as lead-distributors, besides being able to do it without blocking the roads with miles of slow-moving transport.

It is known to some of us that even under the present conditions of stagnatory war several squadrons of the Motor Bandits, under Lieut.-Commander the Duke of Westminster, R.N.V.R., have done really valuable work, by working up close to our trenches in the dark or in the early morning fog, smashing up German vantage points with their quick-firers (not machine-guns) at the first streak of clear dawn, and then clearing out before the German artillery can get to work on them.

The fact that they have nothing to do with the sea does not affect the question. "H.M.S. Crystal Palace"





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and "H.M.S. Flatroof" have nothing to do with the sea, but they both do good work. The Royal Naval Division infantry have done splendidly at the Dardanelles, and the discipline and smartness at the Crystal Palace to-day would scare most line battalions of the Army. Even the Anti-Aircraft Corps manages to justify its existence here and there. So, if the Admiralty likes to equip a force of armed motors and call them the Armoured Car Brigade, or Armoured Car Support for Aircraft, what does it matter, so long as they do good work?

But it is up to the Admiralty and War Office between them to see that that force is properly used in co-operation with the Army. The people at the top must

teach the land-going sailors to be decently behaved, and to be properly respectful to Army officers of superior rank, and the War Office must teach hide-bound Corps Commanders and stuffy old Brigadiers and Division Commanders that the Armoured Cars are there to be used by the Army under the orders of the local military authorities, and that they are not merely automobile pirates who have no fixed place in the plan of campaign.

Lack of co-operation between the Services has wasted millions of pounds and thousands of lives in the past century. This is the opportunity to put those mistakes straight. Like everything else in this war it is purely a matter of organisation.—C. G. G.

## On "The Aeroplane's" Past and Future.

With the next issue, dated July 7th, *THE AEROPLANE* commences its ninth volume, this present issue completing its fourth full year of publication. As a matter of fact, the first issue of this paper was produced on June 8th, 1911, but in order to make the half-yearly volumes coincide with the beginning and middle of the year the first volume contains a few more weekly issues than its successors.

When the paper was started, it, like the science and industry with which it dealt, was a very small thing, and there were those who prophesied its decease within a few weeks, judging its possibilities by experiences with papers run on obsolete lines, and forgetting that a new thing like aviation demands new methods. Despite prophecies of evil, and periods when matters reached such a crisis that the life of the paper was actually in danger, *THE AEROPLANE* has survived, and one may say, without boasting, that it has justified its existence.

In every phase of the development of aeronautics it has led the way, so that, although it is not the oldest aeronautical paper in the world, it has a valid claim to its motto, "To have been first merely proves antiquity; to have become first proves merit."

When *THE AEROPLANE* was founded, there was no Royal Flying Corps, but only an Aeroplane Company of the old Air Battalion R.E., which originated with a solitary Blériot owned by the officer commanding that little company. The Navy had no aeroplanes at all, and it was only at a later date that the foundations of the aviation section of the Navy were laid through three Naval officers and a Marine officer learning to fly on three Short biplanes lent by a private member of the Royal Aero Club, now an officer of the R.N.A.S. They were taught by another member of the Aero Club, now inspecting aircraft for the R.F.C., who devoted the better part of six months to the task, living all that time at Eastchurch at his own expense. And they flew over the Aero Club's ground without cost to the Navy. Neither the Club nor these two patriotic members have ever received any public acknowledgment of their services to the nation, though to them is primarily due the splendid work done by the R.N.A.S. aeroplanes, apart from the fact that they and two or three other Aero Club members kept alive the firm which was the first to provide the Navy with seaplanes fit to use on the sea.

### Looking Ahead.

In those early days some of us foresaw the part aircraft would play in the next war, and also foresaw that the said war was not very far distant, so we devoted ourselves to getting things done, while others wasted time, space, and money playing about with empty formulæ based on insufficient data. We backed up the practical man who made aeroplanes which really flew, and it speaks highly for the judgment of those with whom I have had the good fortune to be associated on this paper that we never backed the wrong horse.

All those in whom we believed have "made good," while those we held up to ridicule or criticised adversely have failed. The good men have in some cases passed through adversities due to the machinations of jealous enemies in high places, but they have come out on top. The others have gone under, though some have been propped up by personal or political influence even to this day, and will continue to be a deleterious influence until such time as a strong and earnest man arises who can sweep the Augean Stables of officialdom.

Like all reformers and pioneers, we on *THE AEROPLANE* got ourselves heartily disliked for speaking straight truths; not only by the self-seeking humbugs but by honest men whose conventional souls or stereotyped ideas of good taste were shocked by plain speaking. There are highly estimable and really efficient officers in the R.F.C. to-day who regard this paper and its editor as interfering with things that do not concern journalism. I quite understand and respect their point of view, and would merely ask them to consider how much further behind the Germans the equipment of the R.F.C. would have been if this paper and its allies had not kept hammering away in the press and in Parliament for the enlargement and better equipment of military aviation.

### Those Who are Serving the Country.

I have said before that I have been fortunate in my assistants, and this seems an eminently suitable place in which to pay a little tribute to them personally.

My first assistant was Mr. P. K. Turner, a young man of very high scientific attainments, and that rare bird, a mathematical humorist. He was also a trained engineer and a remarkably sound critic of other people's work. He left to take up wireless experiments on a new system, and he is now training wireless operators, many of his pupils being on active service.

In 1912 I had the good fortune to secure the assistance of Mr. W. E. de B. Whittaker, to whom I wish here to express my indebtedness for a liberal education on the purely military side of aeronautics. He is a capable judge of anything mechanical, he is one of the most perfect car drivers I have sat beside, and his knowledge of petrol engines and their ways is immense. In fact, he has all the attributes of the mere practical mechanical engineer. Yet, in some extraordinary way, he combines a taste for mechanics with a literary style which belongs to the great essayists of the 18th or early 19th centuries, and mixes with it a quiet, dry humour or scathing sarcasm, which makes his work a delight to anyone who appreciates the art of writing. He was bred as a soldier, and soldiering has always been his hobby, hence the knowledge of military matters which made him an infallible guide as to the future of military aviation. Many distinguished officers have expressed their appreciation of his high ability in writing week after week for over two years regular essays combining literary grace, mordant wit, and sound military science of a kind usually only obtainable in the dulllest of official language.



ERNEST B. H. LANDER. 1915.

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Mr. Whittaker is now a Lieutenant, R.N.A.S., attached R.N.A.S., at the Dardanelles, and so cannot protest for some weeks against my remarks. I can therefore say with safety that he has the makings of an ideal staff officer if his physique can stand the work, and that I sincerely trust he may in due course return with Service distinctions to aid in the future progress of the paper which already owes so much to his ability.

Contemporary with the latter part of Mr. Whittaker's work on this paper was Mr. W. H. Sayers, an engineer of great practical experience, and possessing theoretical ability of an uncommon order. Primarily an electrician, he took to aeroplane work in its early days, and won a reputation as one of the best fitters and mechanics in the business. At the same time, he studied the techniques of the aeroplane, and had worked out most of the theory of inherent stability from practical experiments at a time when the majority of people building aeroplanes had no idea what stability meant. Unfortunately for him he does not possess a glib tongue nor any capacity for what is commonly known as "bluff," so he never obtained the financial support necessary to put his theories into practice.

He does, however, possess a singular capacity for explaining complex theories on paper in simple and easily understood language, and in that way he has done excellent work for aviation in general, and for this paper in particular, by setting forth for the benefit of the ordinarily mechanically-minded reader many of the abstruse problems concerning aeroplanes. Early in the war he joined the Royal Naval Air Service in the capacity of a simple Chief Petty Officer, and I am glad to think that his high ability and his unlimited capacity for work is being turned to some practical use.

Among the others to whom I am indebted for valuable work in the past is Mr. Cyril Mocatta, formerly one of M. Grégoire's draughtsmen in Paris, and a first-class engine hand. He left me to enter the motor-cycle business, and at the beginning of the war he went out as a motor-cycle despatch rider. Through the retreat from Mons, up to the Aisne, and thence round to Ypres, he acted as "galloper" to General Sir Horace Smith-Dorrien, and was given a commission in the Royal Engineers (Signal Section) soon after Christmas.

Mr. Arthur Barr, the son of the late Mr. Robert Barr, the famous novelist, did much excellent descriptive work of a singularly brilliant kind in this paper, but left in 1913, owing to his health giving way. He then went to Morocco. Returning just before the war, he joined the Argyll and Sutherland Highlanders, and has seen much hard service during the past few months.

Mr. Roy DeLaCombe, one of my junior assistants and a hard worker, was given a commission in the Connaught Rangers early in the war, and after much hard work in Ireland had the misfortune to go down with rheumatic fever, and is slowly recovering.

Mr. E. M. Rossiter, a born artist, and a youngster possessing a natural gift for mechanical work combined with the ability to express himself on paper, joined the R.N.A.S. Kite Balloons on attaining military age. He should go far in the Service.

Mr. Bert Dunn, my Scottish correspondent, whose

news was very accurate and most informative, is now serving with the Scottish Horse, and, given fair opportunity, his tenacity and businesslike methods should lead to early promotion.

Mr. A. C. Burgoine, a clever engineer, and most knowledgeable on seaplane construction, who did much good work for the paper, joined the R.N.A.S. also, and his ability should be of great value.

Of the present staff none are physically fit for military service, but my chief assistant, Mr. Wade, has served as a Special Constable since the Special Constabulary were raised, and has had sufficient weird and strenuous experiences, ranging from contiguous Zeppelin bombs and anti-German riots to bogus spy hunts and attempted suicides, to fill a book if he cares to write one later on, so he also has "done his bit" for the country to the best of his ability.

As to the editor, myself, being still some few weeks inside military age, according to the new law, I am waiting to be "conscripted," and am, meanwhile, busily occupied giving good advice to all and sundry, from the Nation at large to the inevitable youth who desires to be a commissioned officer without any qualifications.

Probably, these personal notes about those to whom THE AEROPLANE owes so much have bored my readers, but I felt it my duty to give to each of my assistants some slight acknowledgment of my appreciation ere he gets himself killed, and I promise not to offend again.

#### The New "Aeroplane."

As to the future, this is the last issue in which THE AEROPLANE will appear in its present form. Hitherto the aeroplane trade has been a little trade, and a little paper has sufficed for its needs. Henceforth, the said little trade is to be a great industry, and it will need a big paper to deal with it, as it grows. Therefore, the first issue of Volume IX of THE AEROPLANE will be larger in size and larger in type. It is also hoped that, with the help of the industry for which it has fought in the past, it will be thicker.

In its small form this paper has become very popular throughout the Services and the trade alike. Kindly people write almost daily saying how they like the "bright little paper." Now, there is something patronising in that remark, and a paper which has done as much as this paper has accomplished does not deserve to be patted on the head. I rather like being hated, but I hate being patronised.

Therefore, henceforth, no one will be able to call this a "little" paper. Bright, I hope it will always be. Brutal, perhaps, at times when occasion demands. Iconoclastic always, while idols have feet of clay and brazen faces. Helpful, practical, truthful, informative, what you will, so that it be of use, firstly, to the Services, and, secondly, to the aeronautical industry. But little, never again, unless German efforts cause a paper famine, or unless someone in high places who is unable to stand salutary criticism succeeds in suppressing the paper altogether. In that case, naturally, there will be no paper at all, for if things become as bad as that the infants, the maimed, the halt, and the blind of the staff will be out defending their hearths and homes, while the editor continues to give advice. C. G. G.

#### The Business Instinct.

An excellent story is told of the recent raid on London by one who visited the gestrafen area the morning after the visitation. A bomb had fallen between two small houses in a poor neighbourhood, more or less shattering the out-built lean-to wash-houses thereof. One of the houses was inhabited by an old dame of an age adjacent to three score years and ten. This dear old lady, far from being petrified by so emphatic a manifestation of Zeppelinschrecklichkeit, proceeded without delay to affix a suitable notice on the street door, inviting the onlookers to enter and inspect the damage, and stood with a bowl in her hands to receive their votive offerings.

Although there was really not much to see, the invitation so whetted the curiosity of the crowd that considerable difficulty was soon experienced in using the street door both as an ingress and as an egress, so the old dame decided to go into partnership with the people next door! Ladders were placed over the dividing wall, and people thenceforth paid their money at one door, inspected the damage in that house, climbed over the garden wall, and passed out of the other house, thus getting double value for their money, with the thrills of scrambling over the ruins of Pompeii thrown in.

The teller of the story was so touched by the old lady's sporting eye to business in defiance of Fate, Weltpolitik, and her own nerves, that he contributed a florin to the collection.

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## Naval and Military Aeronautics.

From the "London Gazette" of June 18th, 1915.

A Third Supplement to the "London Gazette" of June 18th, issued on June 22nd, contains the names of those whom Field-Marshal Sir John French recommends (under date May 31st) for gallant and distinguished service in the field. The names of those connected with aeronautics are reproduced below:—

WAR OFFICE, JUNE 22ND, 1915.

GENERAL HEADQUARTERS STAFF, Etc.—

Capper, Col. (temp. Brig.-Gen.) J. E., C.B.

Sykes, Brev. Lieut.-Col. (temp. Col.) F. H., 15th Hussars.

ROYAL FLYING CORPS.

Barrington-Kennett, Brev. Maj. B. H., Grenadier Guards (killed); Barton, Capt. R. J. F., Royal Scots Fusiliers; Beatty, Capt. (temp. Maj.) W. D., Royal Engineers; Birch, Lieut. W. C. K., Yorkshire Regt.; Brooke-Popham, Brev. Maj. (temp. Lieut.-Col.) H. R. M., Oxfordshire and Buckinghamshire Light Infantry.

Carthew, Capt. T. W. C., 4th Battalion, Bedfordshire Regt.; Cherry, Capt. R. G., Royal Artillery; Crosbie, Capt. D. S. K., Argyll and Sutherland Highlanders; Cruickshank, Lieut. G. L., Gordon Highlanders.

Freeman, Lieut. (temp. Capt.) W. R., Manchester Regt.

Hankin, Lieut. H. M., Corps of Guides; Hawker, Lieut. (temp. Capt.) L. G., D.S.O., Royal Engineers; Holt, Capt. (temp. Maj.), F. V., D.S.O., Oxfordshire and Buckinghamshire Light Infantry; Hynes, Capt. G. B., Royal Artillery.

Lascelles, Sec. Lieut. J. F., Rifle Brigade; Lee, Lieut. (temp. Capt. in Army) C. F., West Somerset Yeomanry; Ludlow-Hewitt, Capt. E. R., Royal Irish Rifles.

Mills, Lieut. (temp. Capt.) R. P., Royal Fusiliers; Morgan, Lieut. A. E., 6th Battalion, Royal Fusiliers (killed); Murphy, Capt. C. F. de S., Royal Berkshire Regt.

Powell, Temp. Lieut. E. W.; Pretymann, Lieut. (temp. Capt.) G. F., D.S.O., Somerset Light Infantry.

Rabagliati, Lieut. (temp. Capt.) C. E. C., Yorkshire Light Infantry; Raleigh, Brev. Maj. G. H., Essex Regt. (killed); Rhodes-Moorhouse, Lieut. W. B., V.C., Special Reserve (died of wounds); Roche, Lieut. (temp. Capt.) H. J. A., Royal Munster Fusiliers (killed).

Spence, Lieut. C. B., Royal Artillery (killed).

Tennant, Lieut. (temp. Capt.) J. E., Scots Guards; Trenchard, Brev. Lieut.-Col. H. M., C.B., D.S.O., Royal Scots Fusiliers.

Vaughan, Lieut. (temp. Capt.) R. M., Royal Inniskilling Fusiliers.

Wanklyn, Lieut. (temp. Capt.) F. A., Royal Artillery.

Barter, No. 556 Cpl. A.; Bird, No. 944 Cpl. T. G.; Evans, No. 546 Cpl. C. R. S.; Fulton, No. 1112 Flight-Sgt. J.; Kelly, No. 272 Sgt. E. J. P.; Mead, No. 270 Sgt.-Maj. J.; Payne, No. 173 Sgt.-Maj. S. J.; Rumford, No. 931 Sgt. E. C.; Traylor, No. 72 Sgt. F. F.; Waddington, No. 10 Sgt.-Maj. W.; Webb, No. 191 Sgt. W. G.; Wilkinson, No. 23 Sgt.-Maj. J.

\* \* \*

From the "London Gazette," June 22nd, 1915.

ADMIRALTY, JUNE 16TH.

ROYAL NAVAL AIR SERVICE.—To be flight sub-lieut. for temp. service: M. H. Spencer, June 4th. To be flight lieuts. for temp. service: A. P. Mackilligin, E. J. C. Roberts. June 1st.

\* \* \*

WAR OFFICE, JUNE 22ND.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Asst. Eqmpt. Officer—Lieut. T. W. P. L. Chaloner, 4th Yorks., T.F. June 5th.

\* \* \*

The "London Gazette" of June 22nd contained the following:—

The King has been graciously pleased to give orders for the award of the Distinguished Service Cross to Flight Lieutenant John Philip Wilson, R.N., and Flight Sub-Lieutenant John Stanley Mills, R.N., for their services on June 7th, 1915, when, after a long flight in the darkness

over hostile territory they threw bombs on the Zeppelin shed at St. Evère, near Brussels, and destroyed a Zeppelin, which was inside. The two officers were exposed to heavy fire from anti-aircraft guns during the attack.

\* \* \*

From the "London Gazette," June 23rd, 1915.

WAR OFFICE, JUNE 23RD, 1915.

His Majesty the King has been graciously pleased to approve of the undermentioned Honours and Rewards for distinguished service in the Field, with effect from June 3rd, 1915, inclusive:—

STAFF.

TO BE MAJOR-GENERAL.—Col. (temp. Brig.-Gen.) J. E. Capper, C.B.

TO BE EXTRA AIDE-DE-CAMP TO THE KING.—Major and Brev. Lieut.-Col. H. M. Trenchard, C.B., D.S.O., Royal Scots Fusiliers and Royal Flying Corps, and to be Brevet Colonel.

ROYAL FLYING CORPS.

Brevet Major—Capt. (temp. Maj.) W. D. Beatty, Royal Engineers; Capt. (temp. Maj.) S. D. Massy, Indian Army.

Companions of the Distinguished Service Order.—Brev. Maj. (temp. Lieut.-Col.) H. R. M. Brooke-Popham, Oxfordshire and Buckinghamshire Light Infantry; Capt. T. W. C. Carthew, Bedfordshire Regiment (Special Reserve).

The Military Cross.—Lieut. (temp. Capt.) B. T. James, Royal Engineers. Lieut. (temp. Capt.) R. M. Vaughan, Royal Inniskilling Fusiliers. Lieut. (temp. Capt.) F. A. Wanklyn, Royal Artillery. Lieut. G. L. Cruickshank, Gordon Highlanders. Sec. Lieut. J. F. Lascelles, Rifle Brigade.

ROYAL REGIMENT OF ARTILLERY.

THE MILITARY CROSS: Second Lieut. R. A. Archer (attached Royal Flying Corps).

ROYAL FLYING CORPS.

DISTINGUISHED CONDUCT MEDAL.

1370, Sergt. R. H. Carr (now Sec. Lieut. in S.R. of O.); 672, Corpl. W. Dobbie; 671, 1st Class Air-Mech. W. Harper; 255, Flight-Sergt. W. C. Hayward; 15, Flight-Sergt. T. Hughes; 1082, Corpl. H. Jameson; 1836, 1st Class Air-Mech. L. S. Newns; 836, Corpl. R. E. P. Paynter; 1376, Sergt. E. R. C. Scholefield (now Sec. Lieut. in S. R. of O.); 306, Flight-Sergt. T. G. Tindale.

\* \* \*

From the "London Gazette," June 24th, 1915.

WAR OFFICE, JUNE 24TH.

ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers—June 10th: Temp. Sec. Lieut. J. C. Quinnell, R.A., Sec. Lieut. H. E. van Goethem, S.R., Sec. Lieut. R. E. A. W. Hughes-Chamberlain, S.R.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieut. (on prob.) H. E. van Goethem confirmed in rank. G. B. Bulman to be sec. lieut. June 14th.

To be sec. lieuts. (on prob.): R. F. B. Baynes. June 5th. E. A. B. Rice. June 8th. C. Defries. June 15th.

TERRITORIAL FORCE.—6th (King's) Liverpool Regt.—Sec. Lieut. W. Reid seconded whilst employed with Royal Flying Corps. June 4th.

\* \* \*

From the "London Gazette," June 25th, 1915

ADMIRALTY, JUNE 21ST.

SUPERNUMERARY CAPT. ABSORBED IN ESTABLISHMENT.—Capt. (temp. Maj.) C. E. Risk, vice Lees, promd.

\* \* \*

WAR OFFICE, JUNE 25TH.

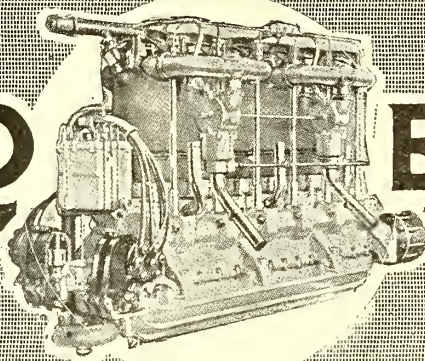
INFANTRY.—LANCS. FUSILIERS.—Qmfr.-Sgt. H. E. Chaney, from Sch. of Musk., to be sec. lieut., and seconded for service with Royal Flying Corps. Dec. 4th, 1914, but not to carry pay or allowances prior to Feb. 10th. (Substituted for notification in "Gazette" of Feb. 9th.)

ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers to be Flight Coms.—June 11th: Capt. M. W. Noel,



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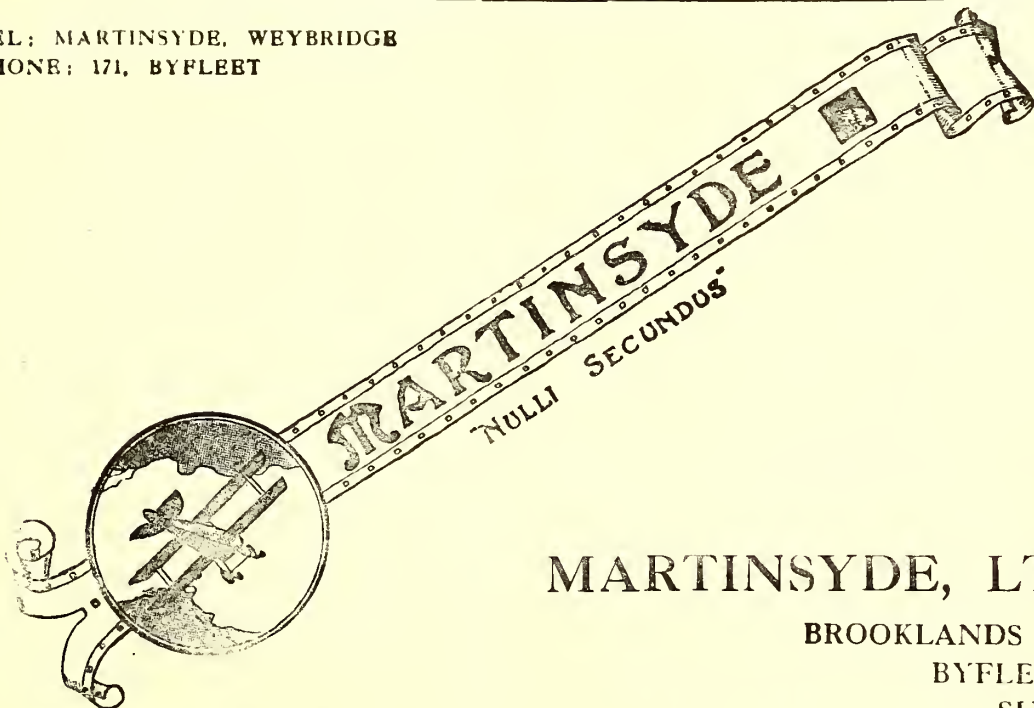


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L'pool.; Lieut. G. W. Mapplebeck, D.S.O., L'pool., and to be temp. capt. whilst so employed; Lieut. S. Barrett, R.A., and to be temp. capt. whilst so employed; Lieut. V. A. Barrington-Kennett, S.R., and to be temp. capt. whilst so employed; Lieut. (temp. Capt.) J. B. T. Leighton, S. Guards, and retain temp. rank; Lieut. W. C. Adamson, S.R., and to be temp. capt. whilst so employed; Lieut. J. L. Kinnear, L'pool., and to be temp. capt. whilst so employed; Sec. Lieut. C. C. Wigram, S.R., and to be temp. capt. whilst so employed; Capt. D. W. Powell, Northants.

Flying Officers.—Sec. Lieut. Hon. O. M. Guest, Lothians and Border H. Yeo., T.F. May 28th. Temp. Sec. Lieut. B. P. Greenwood. June 3rd. June 11th: Maj. F. W. Richey, R.A., and seconded; Capt. R. A. Cooper, Hants Yeo., T.F.; Sec. Lieut. T. Garnc, 4th Conn. Rang., and seconded; Sec. Lieut. F. L. Mond, 6th Lon. Brig., R.F.A., T.F.; Sec. Lieut. W. J. C. Kennedy-Cochran-Patrick, Rifle Brig., and seconded.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—H. Le Jeune to be sec. lieut. (on prob.). Dec. 29th.

\* \* \*

From the "London Gazette," June 27th, 1915.

WAR OFFICE, JUNE 27TH.

REGULAR FORCES.—ESTABLISHMENTS.—ROYAL FLYING CORPS.—MILITARY WING.—Flying Officers—June 7th: Lieut. M. J. Ambler, 14th Hrs., and seconded; Sec. Lieut. L. W. Learmount, S.R.

\* \* \*

From the "London Gazette," June 28th, 1915.

WAR OFFICE, JUNE 28TH.

SPECIAL RESERVE OF OFFICERS.—SUPPLEMENTARY TO REGULAR CORPS.—ROYAL FLYING CORPS.—MILITARY WING.—Sec. Lieut. (on prob.) L. W. Learmount is confd. in rank. To be sec. lieuts. (on prob.): W. T. Ll. Allcock. June 12th. E. W. J. Payne. June 21st.

#### NAVAL.

The following appointments were notified at the Admiralty on June 24th:—

ROYAL NAVAL AIR SERVICE.—Temp. Sub-Lieut., R.N.V.R., C. A. Maitland-Heriot entered as proby. flight sub-lieut. for temp. service, to date June 22nd.

Messrs. R. F. E. Wickham and L. A. T. Pritchard entered as proby. flight sub-lieuts. for temp. service, to date June 26th.

\* \* \*

The following appointments were notified at the Admiralty on June 25th:—

ROYAL NAVAL AIR SERVICE.—Capt. T. A. M. Ashton, Territorial Force Reserve, granted a temp. commission as lieut. and appointed to the "President," additional, to date June 8th.

The undermentioned have been granted temp. commissions as lieuts., R.N.V.R., and appointed to the "President," additional, for R.N.A.S., to date as stated: R. D. Carey, June 18th; P. Blair, June 24th; J. R. Prioleau, June 17th; R. F. Maitland, June 23rd.

The following have been granted temp. commissions as sub-lieuts., R.N.V.R., and appointed to the "President," additional, for R.N.A.S., to date as mentioned: R. A. Laws and W. H. Wood, June 18th; G. Whale, June 20th; G. E. Baxter, June 16th.

Messrs. H. D. Hyde, W. P. D. C. Scott, and N. E. Stirling entered as probationary flight sub-lieuts. for temporary service, and appointed to the "President," additional, for R.N.A.S., to date June 18th.

Temp. Sub-Lieut. F. Dunn promoted temp. lieut. and appointed to the "President," additional, to date June 23rd.

\* \* \*

The following appointments were notified at the Admiralty on June 27th:—

ROYAL NAVAL AIR SERVICE.—Temp. Lieuts., R.N.V.R.—A. D. Borton, N. H. Nutt, and C. Lister promoted to lieutenant-commanders, with seniority June 24th.

Temp. Lieut. P. W. Stout granted a temporary commission

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as lieutenant, R.N.V.R., and appointed to the "President," additional, for duty with the R.N.A.S., to date June 21st.

Temp. Sub-Lieuts., R.N.V.R.—C. H. Parkes, P. M. Woodland, F. H. Hayward, H. G. Atkinson, and R. G. Blakesley promoted to temporary lieutenants and reappointed, to date June 24th.

The following have been entered as probationary flight sub-lieutenants, for temporary service and appointed to the "President," additional, for R.N.A.S., to date as stated: A. M. Blake, R. S. Dallas, J. E. Minifie, and P. W. James, June 25th; Temp. Sub-Lieut. G. H. Bettinson, to date June 27th; and Sec. Lieut. H. V. Reid, to date June 24th.

Temp. Sec. Lieut., R.M., W. B. Jones, to the "President," additional, for R.N.A.S., to date June 25th.

Proby. Flight Sub-Lieuts.—W. H. Greer, H. S. Kerby, R. B. Pullin, H. R. Hopperton, G. W. Hilliard, L. H. Hardstaff, and D. W. A. Barton reappointed to the "President," additional, to date June 23rd.

Chief Petty Officers, R.N.V.R.—A. M. Gabriel, D. McK. Garlick, F. W. Mansell, and S. Nixon promoted to temporary sub-lieutenants, R.N.V.R., and reappointed to the "President," additional, for R.N.A.S., to date June 24th.

\* \* \*

The King has been graciously pleased to approve of the grant of the Victoria Cross to Lieut.-Commander Martin Eric Nasmith, R.N., for the conspicuous bravery specified below:—

For most conspicuous bravery in command of one of his Majesty's submarines while operating in the Sea of Marmora. In the face of great danger he succeeded in destroying one large Turkish gunboat, two transports, one ammunition ship, and three storeships, in addition to driving one storeship ashore. When he had safely passed the most difficult part of his homeward journey he returned again to torpedo a Turkish transport.

Lieut. Comm. Nasmith is known to many officers of the R.N.A.S. as being responsible for a very gallant act on the occasion of the Cuxhaven raid. He was detailed to wait off Helgoland for the return of the raiders. Two machines alighted near him and he took the crews off.

He had one crew on board and was about to take the crew of the second machine when a Zeppelin hove in sight and proceeded to descend with hostile intent. Instead of submerging and leaving the seaplane to its fate Lieut. Nasmith stood on his deck and waved his cap to the airship, conveying the idea that he was a German vessel busy capturing a British seaplane. As soon as the crew were safely on board he shut down his lid and dived. Whereupon the Zeppelin, seeing that it had been spoofed, proceeded to rain bombs on the disappearing submarine, and the wrecks of the two seaplanes, which latter it destroyed utterly. Some bombs fell very close to the submarine, and those on board heard only too distinctly through the water the bursting of the various bombs intended for their destruction. However, they all got away safely, thanks to the coolness of the skipper of the submarine. There was quite a general opinion in the R.N.A.S. at that time that he then deserved a V.C.

\* \* \*

The Secretary of the Admiralty announced on June 23rd the following casualties in the Dardanelles:—

#### SEVERELY WOUNDED.

Armoured Car Squadron, attached to R.N. Div.—Rumming, Geoffrey Charlton Paine, Air Mechanic, 1st Grade.

#### SLIGHTLY WOUNDED

Armoured Car Squadron, attached to R.N. Div.—Bartlett, William Harry, P.O. Mechanic.

\* \* \*

The Secretary of the Admiralty announced the following casualties on June 27th:—

#### OPERATIONS IN THE DARDANELLES.

#### WOUNDED.

Armoured Car Squadron, Attached to R.N. Division.—Harrison, Cecil Norman, P.O. Mechanic; Seagar, Arthur Herbert, P.O. Mechanic.

\* \* \*

A public welcome was given on June 23rd at Newton Abbot,

the Devonshire town in which he was born, to Flight Sub-Lieut. J. S. Mills, R.N., who with Flight Lieut. John Wilson attacked and destroyed a Zeppelin and its shed near Brussels on June 7th. The Chairman of the Urban Council presented to Lieut. Mills an illuminated address recording the town's appreciation of his achievement. In reply Lieut. Mills said, with very proper and becoming modesty, that thousands of Britons were doing more heroic things daily. "We want," he added, "every fit man to fight in this war."

\* \* \*

It is most extraordinary in these troubled times how utterly unfounded rumours of utterly non-existent troubles persist in cropping up with such insistent pertinacity that they obscure and eclipse all manner of other troubles that are really worth troubling about.

The writer of this troublesome paragraph was quite recently submitting to the machinations of his family Kopfstrafer [otherwise Barber—that is the worst of these polyglot contributors.—Ed.] when he heard the following tale of woe. A fellow sufferer in a neighbouring chair assured his Kinnstrafer that he had it from very good authority at the War Office (sic) that on the night of the Zeppelin raid on London, a certain aviator left Hendon half an hour after the said raid, with the avowed object of Zeppelinstrafing, accompanied by a passenger. The passenger could not understand why the pilot persisted in flying steadily due south-east, until after half an hour or so, when he realised that the officer was a pro-German and was making a bee-line for Germany! He thereupon shot the pilot in the hand, thus causing him to lose control of the machine and land. The traitor aviator was thereupon summarily court-martialled and shot out of hand.

It is even funnier than the other yarn that the officer commanding one of our air stations was court-martialled and dismissed the Service because he did not turn out all the school machines at his station (most of them having a limit of climb of about 1,500 feet) and go chasing Zeppelins on the occasion of a recent raid.

\* \* \*

A special appeal was made some time ago to the police to enlist in the Royal Naval Air Service. The requirements of the Kite-Balloon Sections demand powerful men, and it was thought that the police forces of the country would provide the best possible material. Recruits with mechanical skill were particularly asked for, and the response of the constabulary was extensive and prompt. Many men who worked at a trade before joining the police enlisted in the air service to pursue their old trade.

The R.N.A.S. speaks in the highest terms of the adaptability of its recruits. After a few weeks' training at the depot, where their fine physique and bearing attracted much admiring notice, many of the ex-police have become proficient, and sent to one of the theatres of war. But excellent as the police recruits were, Sir Edward Henry feels that London cannot spare any more, so further permission to join has been refused.

#### MILITARY.

The Casualty List published on June 23rd contained the following:—

#### WOUNDED.

Under date June 17th:—

Norris, Lieut. E. F., Royal Flying Corps.

Date not given.

Unwin, Capt. E. F., Army Service Corps and Royal Flying Corps.

\* \* \*

The following casualty in the Indian Forces was officially reported without date in the Casualty List published on June 25th:—


#### EXPEDITIONARY FORCE: OFFICER WOUNDED.

Marshall, Capt. A., 28th Cavalry, attd. Royal Flying Corps.

The "Court Circular," dated from Buckingham Palace, Friday, June 25th, says that Captain E. L. Conran, 21st Empress of India's Lancers, had the honour of being decorated with the Military Cross by the King that afternoon.



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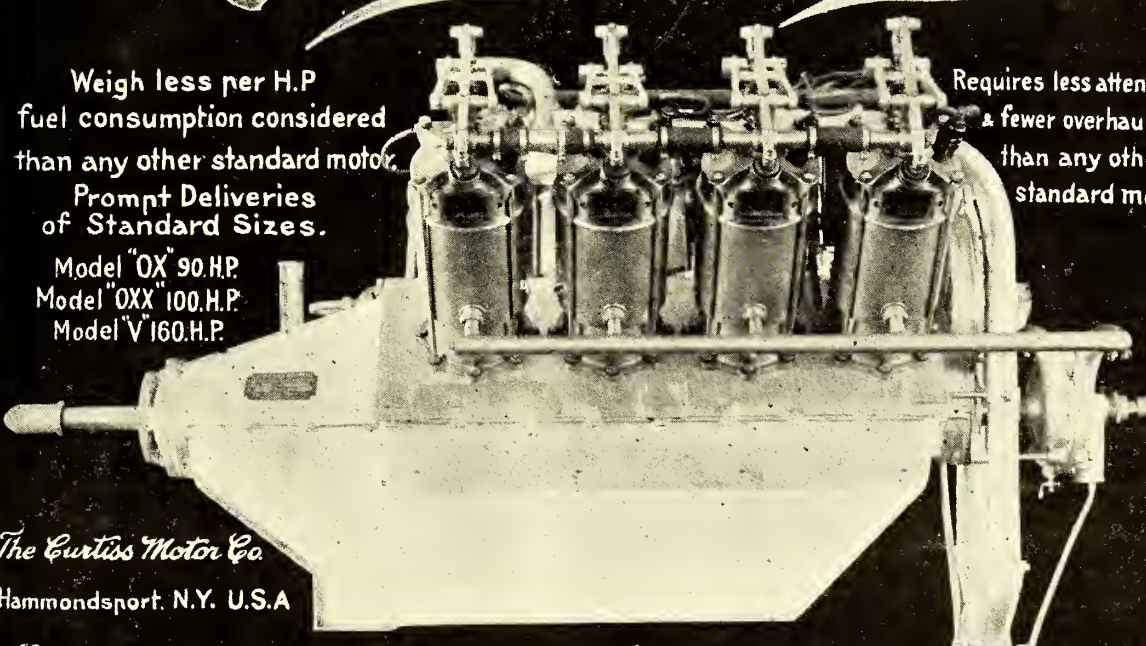
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The following passage in the descriptive account communicated by an Eye-Witness present with General Headquarters continuing and supplementing the narrative published on June 21st deals with aircraft:—

June 23rd.

Sunday, the 20th, was also quiet. . . There were two engagements in the air on this day. Near Roulers one of our machines on a reconnaissance duty encountered a hostile aeroplane, and after a machine-gun duel forced it to descend hurriedly to earth. A combat with machine-guns at a height well over a mile above the earth's surface, though now not uncommon, may be considered to provide some excitement; but on the same day two other officers of the Royal Flying Corps had a still more exciting experience.

While reconnoitring over Poelcappelle at a height of about 4,000 ft. they engaged a large German biplane having a double fuselage, two engines, and a pair of propellers. The German machine at first circled round ours, shooting at it with a machine gun, but so far as is known not inflicting any damage. Then our observer fired about fifty rounds in return at under two hundred yards range. This had some effect, for the hostile biplane was seen to waver. After some more shots its engines stopped, and it nose-dived to a level of 2,000 ft., where it flattened out its course, flying slowly and erratically.

Under a heavy fire from anti-aircraft guns down below our pilot turned towards our lines to complete his reconnaissance, when his machine was hit and he decided to make for home. But the petrol tank had been pierced, and as the aeroplane glided downwards on the slant, the petrol was set alight by the exhaust and ran blazing down to the front of the body of the aeroplane, which travelled on to the accompaniment of the rattle of musketry as the unexpended rounds of machine-gun ammunition exploded in the heat and those in the pilot's loaded revolver went off.

The pilot, however, did not lose control, and the aeroplane proceeded steadily on its downward course. Before it reached the ground a large part of the framework had been destroyed, and even the hard wood blades of the propeller were so much burnt that the propeller ceased to revolve in the rush of air.

When the machine finally landed behind our lines both the officers were severely burnt, and the pilot, on climbing hurriedly out of the blazing wreck, tripped over a wire stay, fell, and sprained his knee.

The few still serviceable portions of the aeroplane were then salvaged and collected under the shrapnel fire of the German guns. As an example of a terse, unvarnished statement of fact, the last words of the pilot's (?) official report of this adventure are worthy of quotation: ". . . The whole of the nacelle (body) seemed to be in flames. We landed at W. 35 n P. 16 (Z Series 93 E.W. 1/35,500)."

\* \* \*

If ever a man deserved a V.C. it is the pilot of that machine for his cool valour in sticking to his work and saving the life of his passenger, when a lesser man would have simply thrown up his hand and collapsed. The mental and physical agony he endured must have far surpassed anything one could encounter in any other arm of the Service. The passenger's quiet method of filling up his report shows that he too is of the stuff of which unadvertised heroes are made. One wishes both officers a quick recovery from their burns.

As to the German twin fuselage twin-engine machine, which has created some stir in the Press, it is of course quite an old idea, and its existence was mentioned in this paper a week or so ago.

It is characteristic of this country that though Short Bros. built twin-engine machines in 1912, and though during the winter of 1913-1914 General Henderson himself on various public occasion strongly advocated the production of the multiple engine aeroplane, and though this paper has been advocating the twin-engine machine for at least as long, and has actually illustrated the type, yet Germany is in front in putting such a machine into the air in land warfare. It is true that, according to the American papers, our Navy owns some twin-engine Curtiss flying boats, of the "Atlantic" type, but that is another matter, and anyhow they are not yet British made.

An inquest was held at Brighton on June 24th on the death of Lieut. F. Morkill, 1st West Yorks Regiment, att'd. Royal Flying Corps, which occurred owing to an accident at the Shoreham Aerodrome on June 22nd. The machine, a 50 h.p. Blériot, was in good order when earlier in the day another officer had flown it from Gosport. Lieut. Morkill had reached about 200 ft. when the engine misfired. In turning to reach the ground the machine side-slipped and fell. The aviator was conscious when picked up, but died next morning at the Brighton Military Hospital.

Major McLean, commanding at Shoreham, suggested that the engine stoppage may have been caused by the fracture of a balance weight of a valve. A verdict of accidental death was returned, and the jury expressed their sympathy with the relatives of Mr. Morkill.

The deceased officer's father said his son had been at the front all the winter. He returned to England in consequence of an attack of influenza, but had quite recovered.

\* \* \*

It is reported that the late Captain Fox, R.E., and R.F.C., who appeared in the Casualty List as having died of wounds, received the said wounds as the result of a French-built propeller-driven biplane of steel-tube construction breaking in the air as he was just reaching home after a gallant effort to destroy enemy communications. If this account is correct, the fact that his wounds were received in this way probably accounts for his bravery not receiving posthumous recognition as in the cases of other officers who have died of wounds received from enemy projectiles.

It may be remembered that warnings against the dangerous construction of certain French machines appeared in this paper months ago, since when one R.F.C. officer for certain has been killed by one of these machines breaking, and apparently the death of Captain Fox also is due to the same cause.

It is also stated that when the engine of one of these machines was being tested on the ground recently in a wind of 30 to 40 m.p.h., the ailerons blew off. It seems extraordinary that, when such strict and proper supervision is exercised over the detail construction of every machine built in this country, aviators in France should apparently be allowed to fly machines which have nothing to recommend them except that they travel fairly fast or climb fairly well.

\* \* \*

The appointment of Colonel Hugh Trenchard, C.B., D.S.O., to be extra Aide-de-Camp to the King and to be full Colonel by brevet, will be welcomed by everyone in the R.F.C. as a recognition of unremitting labour to increase the efficiency of the Corps and to promote the welfare of all belonging to it. How much of the good work done by the R.F.C. is due to Colonel Trenchard's work at the Central Flying School as Chief of Staff to Captain Godfrey Paine, R.N., C.B., M.V.O., and later as Commandant at Headquarters at Farnborough, is known to those who have served under him, and the high personal esteem in which he is held by them all shows how the strict discipline combined with equally strict justice which characterised his régime at both places is appreciated by both officers and men.

\* \* \*

One of the best stories of the war concerns a young cavalry officer, "att'd. R.F.C." as the official wording has it. Somewhere abroad he was relating to a charming lady his first experience of flying, which had only occurred shortly before. He explained how he had never been afraid of anything in his life, hunting, shooting big game, motoring, or anything; in fact, he did not know what fear was, so when he went up in an aeroplane he settled down to analyse his sensations, always a foolish thing to do. At first all went well. He enjoyed the rush through the air, the bird's-eye view of the battle-field, the plunging of the machine like a restive horse. Then he began to feel unhappy, and said to himself, "I believe I'm afraid. This feels very like fear ought to feel. I wonder if I'm a coward after all." He felt more and more unhappy, till suddenly revelation came to him, and he fairly shouted to himself, mentally, "I know what's the matter! I'm not afraid—I'm seasick." And he was—though he expressed the fact as politely as possible in telling his story.

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A minor point of the story lies in the fact that though he did not know it, he was solemnly explaining the air and its ways to a little lady, who, in the past three or four years, has probably flown as much as any R.F.C. pilot, except the old hands who went to France at the beginning of the war.

\* \* \*

A private in the Norfolk Regiment, who is not unknown to many members of the Royal Aero Club, writes home to the following effect:—

"I have just returned to billet after a spell in the trenches. I had rather a warm time last week, managing somehow to lose myself coming back from the trenches. Having discovered my whereabouts, I thought I would take a short cut across some fields. Getting about half-way across, a shell from the Allemands dropped quite close to me, so down I dropped, getting as close to Mother Earth as I could, and I had to stop there while 13 'coal-boxes' exploded around me. After wondering if the whole of the German Empire had dropped on me, I rose very much shaken and covered in dirt and stones, but no damage done. Never mind! better luck next time.

"I have seen several aeroplanes bombarded (British), but have not seen one German yet. I was very sorry to hear (through the medium of your paper) of the death of Lieut. Moorhouse, whom I knew fairly well.

"Your paper is much appreciated by the boys in my section, and it is passed round every week."

#### FRANCE.

The communiqué of June 25th says:—

A German aeroplane yesterday dropped five bombs on the sanatorium of Zuydcoote without doing any damage.

\* \* \*

The communiqués of June 27th say:—

A German aeroplane dropped two bombs on St. Dié. A woman was killed.

Our aeroplanes on June 25th threw some twenty bombs, ten of which were 155mm. shells, on Douai station and the next station on the line. Douai station seems to have been seriously damaged.

\* \* \*

The communiqué of June 28th says:—

Yesterday morning one of our aeroplanes succeeded in dropping with success eight bombs on Zeppelin sheds at

Friedrichshafen. Owing to the stoppage of the motor the aviator was obliged to descend, but he eventually reached Swiss territory at Rheinfelden.

\* \* \*

It is reported that British aviators recently dropped bombs at various points in Flanders, notably at Roulers, where two ammunition trains and a storehouse for shells were blown up and 40 soldiers and a number of officers killed.

#### GERMANY.

The communiqué of June 22nd says:—

Our aviators bombarded the aerial base at Courcelles, west of Reims.

Hostile aerial attacks on Bruges and Ostend caused no military damage.

\* \* \*

The communiqué of June 23rd says:—

South of Lunéville one of our aeroplanes brought down an enemy aviator.

\* \* \*

The communiqué of June 27th says:—

Since the beginning of the great battle near Arras our aviators there have been fighting with the enemy for the supremacy of the air with losses on both sides. Our losses have not been in vain, as for some days we have obviously been getting the advantage.

\* \* \*

The communiqué of June 28th says:—

Especially good results were obtained against enemy aviators on most of the southern front of our battle line.

In an aerial fight near Gerardmer two enemy aeroplanes were shot down. Two other machines were forced to land on Swiss territory near Largitzen and Rheinfelden by our artillery fire.

\* \* \*

Some of the German newspapers publish an article on the Karlsruhe air raid which is obviously an official reply to local criticisms of the military authorities. It sheds very interesting light on the German methods of protection against air attacks. The article, which is reproduced in the "Times," says:—

"It was only just before the arrival of the aviators, who flew at highest speed, that the military authorities in Karlsruhe were informed of their approach by a telephone message from outside. The aviators had made a detour in order to hide



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their real objective. The defence authorities immediately got ready, set their hooters working the moment that the aviators were seen to be enemies, and began firing before the first bomb was dropped. Unfortunately there was for a long time an interruption of the telephone service, so that the military authorities failed in their attempt to inform the civil authorities, with a view to the sounding of hooters on the Rathaus and using the other means of warning the town."

[This reads most curiously like an account of English muddled methods, and is really most consoling.—Ed. THE AEROPLANE.]

It is then explained that improved methods have been adopted for sending information to the anti-aircraft centres and for giving warning, but it is stated that the sacrifice of human life would not have been greatly reduced if the hooters all over the town had worked properly. It is said that, although the anti-aircraft guns made more noise than any hooters, the public totally failed to appreciate the danger, and that this was the cause of so much loss of life.

After their first attack the aviators flew away. When they returned, the town hooters were in full blast, but crowds filled the streets, so that the bombs "reaped a rich harvest." It is stated that very few people would have been killed if the recognised means of self-defence had been taken.

The writer then "repels the charge" that the anti-aircraft guns and rifles showed a lack of energy. It is pointed out that there is great difficulty in firing at aviators over an open town, especially from level ground, and that "there is no ideal means of defence." Machine-guns have only a limited range, and the anti-aircraft guns are difficult to adjust. [That also is consoling information.—Ed.] At the same time, the guns are able to keep the airmen high up, and so to make it difficult for them to aim accurately. The article concludes:—

"It must not be forgotten that squadron attacks upon open cities constitute a completely new kind of warfare, and so the possible and effective means of defence must first be tested and organised. The German military authorities are industriously labouring at the problem. All means of defence against these treacherous attacks will be completely effective only if they are backed up by the behaviour of the people."

[From all of which it may be gathered that Prussian efficiency is not common to the whole German Empire, and that the thorough Prussian system does not seem to obtain in the Grand Duchy of Baden. Undoubtedly the weakness of Germany lies in her Southern States, and there lies our opportunity.—Ed.]

### ITALY.

The communiqué of June 22nd says:—

On the Lower Isonzo . . . Hostile aeroplanes have dropped bombs without doing any damage.—CADORNA.

A message from Brescia on June 24th states that a down-pour of rain is hindering operations. Airships have been obliged to return from scouting expeditions owing to a dense fog and bad weather.

The Turin papers announce the presence in their city of two French aviators—M. André Brindejonc des Moulinais and M. Vedrines (no initial given) to offer their services to Italy, presumably to that nation's Aviation Force. Are they not needed in France? Or are they out for better pay? Or are they loaned to Italy? It would be interesting to know which. Of course, the French officially deny the Turin news.

Italian correspondents allude to the new and wonderful Capronis with wireless, and hint at some great combined aerial doings shortly to take place.—T. S. H.

### AUSTRIA.

A telegram to the "Petit Journal" (Paris, June 28th) from Turin states that at midnight on Thursday, June 24th, an Italian aeroplane dropped bombs on the Ferriera metal works at Trieste, doing considerable damage. The aviators were cheered by the inhabitants.

### BELGIUM.

The "Express" special correspondent at Amsterdam, who on occasion obtains surprisingly accurate inside information from Belgium, reported on June 24th that the recent attack on

the Zeppelin sheds at Evere and Berchem Ste. Agathe, near Brussels, has caused confusion among the German garrison. When the first bombs were dropped two motor-cannons were dispatched to shoot the aviators down. The first gun ran across a railway barrier, which happened to be closed, and was smashed; the second ran over a peasant and into a ditch, where it broke down. The loss of two motor-cannons is serious, as the Germans are said to possess only three more in Brussels, all the others having been sent to the front in Flanders.

An inquiry by Baron von Bissing, the German governor of Belgium, led to the discovery that when the Evere shed was bombarded the officers in charge were absent without leave, and their men were making merry inside the shed, where they were treating a number of women to champagne and other delicacies. It is stated that the officers have been arrested, and will be court-martialled, and the surviving men have been sent to prison. Two of them and three women were killed either by the Allies' bombs or by the fall of Zeppelin wreckage. In Berchem Ste. Agathe the aviators destroyed the German wireless mast.

\* \* \*

It is reported that eight Allied aviators appeared on June 24th over Courtrai, and others were also seen in various places in Flanders, including Emelgem and Ingelmunster. The aviators were heavily fired at, but none was hit.

\* \* \*

On the 27th two British aeroplanes were seen above Ghent. Both returned safely in spite of fire from anti-aircraft guns.

### SWITZERLAND.

It was reported from Berne on June 24th that Lieut. Lugrin and Ober-Lieut. von Keenel, of the Swiss Aviation Service, fell while about to land at the Swiss aviation ground at Dübendorf on a monoplane. Both were seriously injured, and Lieut. Lugrin died.

### TURKEY.

It is reported from Mytilene that on June 22nd a British aeroplane threw bombs on the forts at Vourla without causing much damage. It then flew over Smyrna and dropped three bombs on the forts there, inflicting over 70 casualties.

The following extract from the official statement regarding the operations in the Dardanelles which was issued in Cairo on June 22nd deals with aircraft:—

Following received from Headquarters Mediterranean Expeditionary Force, 22nd:—After 24 hours of heavy and continuous fighting a substantial success has been achieved. . . The enemy lost very heavily. One Turkish battalion coming up to reinforce was spotted by an aeroplane and was practically wiped out by the "75's" before they could scatter.

### Something New.

It is said that a Mr. Arthur Fox, of Hendon, is making a "super-Zeppelin," a model of which will be gradually built up at the War Exhibition in aid of the Belgian Red Cross. When the model, about eighteen feet in length, is ready, it is hoped that it will fly round the exhibition. Mr. Fox gave a "Daily Express" representative some details of the super-Zeppelin which he is building. Mr. Fox is said to have demonstrated the proof of his ability before the most learned and scientific societies in London.

"My Zeppelin would be able to travel at sixty miles an hour," he said. "It would carry a crew of ten, including the captain and pilot."

"A special feature of the super-Zeppelin is the swivelling gear, which not only revolves, but is rotary on its own axis, and is oscillatory. Thus it moves perpendicularly, horizontally, and vertically—in any direction. The result is that my machine will not only lift more than is the usual capacity in most airships, but it is more readily adaptable for steering."

The complete Zeppelin-strafer will have to be capable of achieving more than sixty miles an hour and of carrying more than the weight of six men.

Presumably the "swivelling gear" refers to the propellers. These, it will be remembered, are the patents of Mr. E. T. Willows.



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It seems, in fact, that the number of names sent in by those possessing anything like reasonable qualifications already exceeds the needs of the particular firms through whose inquiries the present writer was moved to make this appeal. Therefore he will be glad to hear from other firms who may want hands, as doubtless they will be able to find many useful workers among those who have applied at this office, for, be it remembered, a keen amateur mechanic who is really interested in aircraft, and is willing to give up a fixed job for the sake of getting into the aeroplane industry, is likely to make at least as good a workman as any ordinary fitter or carpenter who has merely drifted in by chance. Both have to be taught the special tricks of making aeroplane parts, and the keen man will learn quicker.

The applicants for work seem to be in every kind of trade and in every part of the country. Trained carpenters are plentiful, and there are quite a fair number of applications from fitters in other trades, such as those working on printing machinery, cycle shop and garage mechanics, and so forth.

One application comes from a mining engineer with a string of letters after his name who is willing to work as a fitter or erector. Such a man should be invaluable as a shop foreman. Another of similar type is a first-class electric railway engineer who has had much to do with aircraft, and would be a most useful manager of branch works or of a big shop.

Several applicants are young men in fairly comfortable jobs, who have a widowed mother and small brothers and sisters dependent on them. They cannot leave their families to exist on a private soldier's separation allowance, but they want to do work for the country. Such men are not slackers or shirkers, and deserve encouragement.

A number are evidently men of brains and obviously keen, but can be of no use because they have had no experience whatever of using tools. A man who can take the engine of a motor-bicycle to pieces and put it together again without forgetting any of the parts may be worth considering, but one who can only adjust a push-bicycle is hardly qualified, and though it may be that the latter is by nature a born engineer-fitter, it is too much of an experiment to let him loose in a workshop. Nevertheless, firms using semi-automatic machine-tools would find such a man quite useful, because of his keenness.

Plenty of really experienced draughtsmen from other non-Government trades have applied, so some of the new firms now entering the business as sub-contractors who want copies made of the original designs, or who want the R.A.F.'s polyglot dimensions—in inches and fractions, in inches and decimals, and in metric figures, all on one drawing—reduced to understandable figures need not wait for help.

The applicants for part-time jobs are equally varied in class. An M.A. and D.Sc. who is used to the finest electrical machinery offers his time for several hours a day. The proprietor of a cycle-shop and garage, who runs a 5-h.p. gas-engine and various machine-tools, wants the job of making metal parts. There must be thousands of such men available. An engineer's draughtsman, already on aero-engine work, but only working ordinary office hours, offers to put in an extra 20 to 24 hours a week if he is wanted. A Smithfield salesman who habitually works in a friend's engineering shop for fun offers to work hours in his "spare" time which would make a full week's work for most men. Foremen in other works not working overtime offer to take charge of night-shifts so many nights a week.

Sixth-form schoolboys with some experience of carpentry and fitting in the school workshop want to make arrangements to work full time in their holidays. When one comes to think of

it, there must be thousands upon thousands of hefty youngsters of anything between 15 and 18 years of age who, being well educated and thoroughly keen, could do as much work as any grown man if put on to repetition work and just shown what was wanted. The work they could do in the six weeks or two months of their holidays would be well worth having. After all, it would only be adopting the excellent American system by which a youngster earns enough in the summer to pay for his schooling, or, later on, his college course, during the winter.

Taking it all round, the mass of replies to that little paragraph shows that there is no lack of labour available if only employers will realise that a smart, keen, well-educated man who has only used a spanner and a file on a decrepit motor-bicycle may be a better workman than a stupid, ignorant loafer who is supposed to be a trained workman just because he is a member of a Trade Union and has spent so many years in being kicked out of engineering shops for spoiling perfectly good material. Also, the really good-class workman, who takes a pride in his work, will find the former amateur mechanic a better chap to work with and one who will back him up when he wants help, either on his job or in arguments with unreasonable foremen or inspectors.

The writer will be glad to hear from others with some mechanical knowledge who want to get into the aircraft industry, and also from firms who are in want of hands.

\* \* \*

Aeroplane manufacturers employed on reproducing Government designs will find that they can materially increase their output by getting their metal parts from firms specialising on such work. Besides the firm mentioned last week, Rudge-Whitworth, Ltd., of Coventry, recently laid themselves out to produce metal fittings for B.E.2c's on a very large scale, and are already engaged on important contracts for various Government aeroplane departments, as well as for several other constructors.

There is no factory in this country better equipped to produce sheet-metal work than the Rudge Co., and the accuracy with which they are accustomed to work in producing repetition parts for their own bicycles is very much greater than that to which any ordinary aeroplane manufacturer has been used. Consequently, Rudge-Whitworth parts may be accepted practically without question as being accurate in every dimension, and will undoubtedly pass A.I.D. or any other inspection.

Many of the smaller aeroplane makers who are endeavouring to make their own metal parts in small quantities would undoubtedly do very much better if they devoted that section of their works in which they are made to other operations calculated to accelerate their output to a greater extent.

\* \* \*

Messrs. Thompson Brothers (Bilston), Ltd., of the Bradley Boiler and Engineering Works, Bilston, England, write:—

"Re aircraft work, with reference to your article in last week's issue regarding supplies of parts for aeroplanes, we are in a position to supply the undermentioned steel parts: pressed steel ribs, engine plates and housings, forgings, blankings, angle plates, welding, or any kind of steel plate work."

The firm is one of the oldest in the district, having been established in 1810, and makes a speciality of boiler plate welding in thicknesses from 20 gauge to 2 inches, so they should know something of metal-working. Aeroplane constructors who find any difficulties about deliveries of parts would do well to communicate with them.

\* \* \*

Messrs. Lyndin Partners, engineers, of 16, Green Street, Trafalgar Square, S.W., whose works are at St. Paul's Crescent, Camden Road, N.W., write:—"In common with many other engineering firms, we are engaged upon important Government contracts, but as we have recently provided increased facilities we are now prepared to undertake further work. In our machine-shops we manufacture small machined parts of nearly every description. In our smithy, forgings,

tools, and sheet-metal work. At our Stratford works, galvanised metal work, screws, bolts, springs, etc."

The firm will be glad to send their technical representative to see anyone requiring such work if an appointment is made, or if buyers will send samples or specifications of the small engineering work required they will be pleased to send definite quotations.

\* \* \*

A manufacturer of B.E.2c. aeroplanes is stamping off the following blankings and can give immediate deliveries at good prices: Parts 93, 71, 72, 73, 74 and 77, drawing 4065; 35, 4165; 24, 26 and 27, 4008; 26, 27, 28 and 29, 4051. Samples sent by return post with quotations. Sockets for fuselage plates (93, 4056) as accepted by A.I.D. and I.A.D. Delivery in 6 days at 38s. 6d. per gross; also drop-stampings, hinges, parts 20 and 21, drawings 4029, at 39s. 6d. and 36s. per gross, respectively. Inquiries solicited. Goods supplied to samples approved. Box 656, care of THE AEROPLANE.

The same manufacturer can give small deliveries of 14 and 16 gauge sheet steel, R.A.F. specification 9a, to any other manufacturer absolutely held up. Box No. 657a, care of THE AEROPLANE.

The editor knows the firm which is making the above offer, and works managers who find themselves short of these parts need have no hesitation in opening negotiations with the firm, as all the parts are made under the observation of Government inspectors.

### **An Electric Engine Starter.**

Apropos Mr. de Holden-Stone's recent remarks on electric engine starters, it may be of interest to give some particulars of a starting device recently produced by Messrs. C. A. Vandervell and Co., the well-known electrical appliance manufacturers. This self-starter was produced under considerable handicap, for its weight was limited to 84 lbs., and it had to be capable of turning the engine over at 50 r.p.m. for a duration of two minutes continuously. The particular self-starter under review satisfactorily fulfilled the requirements, developing 1.2 h.p. with a gear drive giving a ratio of 38 to 7 in relation to the crankshaft.

As will be seen in the accompanying photograph of a C.A.V. electric self-starter fitted to a 90-h.p. Beardmore-Daimler aero-engine, the apparatus is fitted integral with the

crank-case, which carries the necessary intermediate gear and a simple dog clutch, automatically controlled, which throws the drive out of action immediately the engine fires under power.

A specially constructed 12-volt battery of 66 actual ampère-hour capacity furnishes the necessary current, which, when used intermittently, will ensure approximately 30 starts, providing the battery to be fully charged.

By the additional weight of a suitable dynamo, say 30 lbs., a self-maintaining equipment would be installed in the machine, which, driven off the main shaft, might also be employed for the purpose of illuminating the machine with a headlight for landing in the dark and for illuminating the instrument-board.

The obvious necessity in war-time for the ready starting of both land machines and seaplanes with the crew "all up" must be plain to everyone, and the C.A.V. electric starting motor appears to be a very valuable contribution to the improvement of the fighting aeroplane.

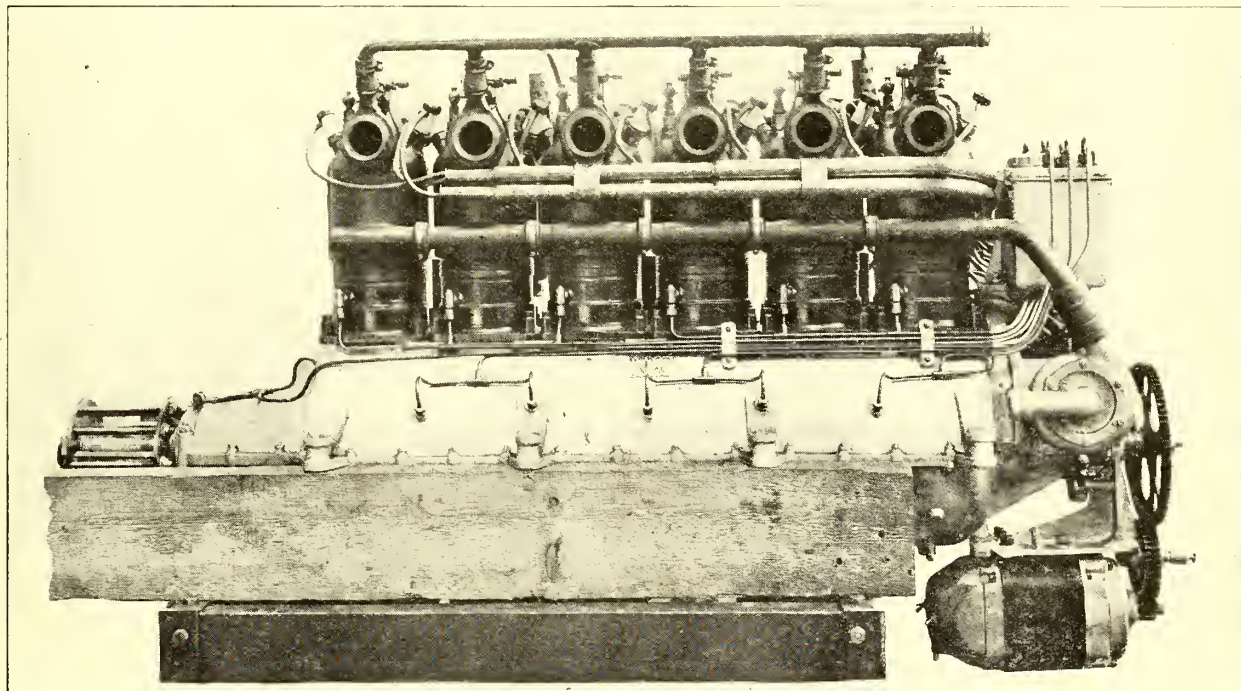
### **A New Revolution Indicator.**

One of the neatest things of its kind which has come to the writer's notice of late is the A.T. Revolution Counter, which is now being placed on the market in a form specially suitable for aeroplane engines.

The dial of this instrument is plainly marked in perfectly equal graduations with heavy figures. The indicator hand starts from zero and works with the utmost precision. The mechanism needs no attention, requires no oiling, and is absolutely noiseless.

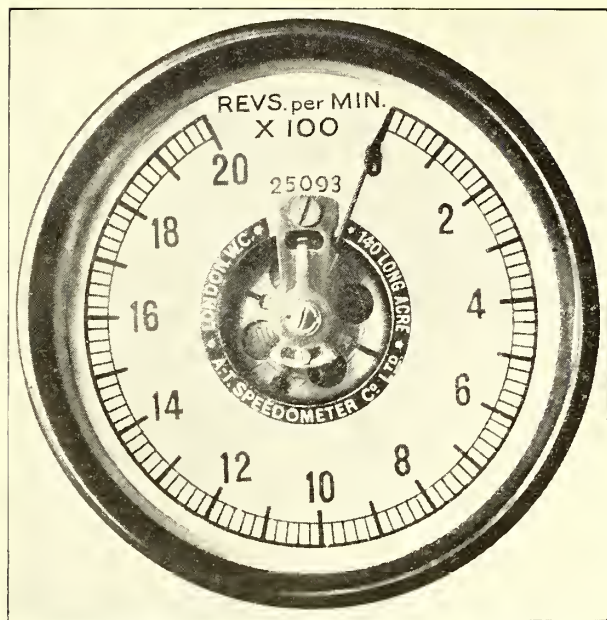
A distinguished feature of the instrument is the armoured driving mechanism. In place of the ordinary internal wire, which sooner or later gives out, the A.T. drive is effected by means of a series of links, thus forming in effect a number of tiny cardan shafts. This cable is enclosed in a spring steel liner which is itself enclosed by a flexible metallic tubing. Owing to the special nature of their construction the links give great strength, durability and precision in working, and the makers guarantee the A.T. cable to stand a year's work on any engine.

The instrument itself is of the magnetic type and gives a dead-beat action, so that it is immediately responsive to every variation in speed. Also it is unaffected by change of temperature or altitude.



The C.A.V. Self-Starter, fitted to a Beardmore-Daimler Aero-Motor.





The new A.T. Revolution Indicator with Magnetic Drive  
Designed for Aero Motors.

The action of the instrument is similar to that of an air-excluded volt-ammeter. The magnet, which is isolated from the body of the casing by 1 mm., sets up, when revolved, an eddy current which is transmitted from pole to pole, and by attraction endeavours to revolve the dial finger, but the latter is restrained by the counter tension of the coil spring. As the strength of the field is increased by the increasing speed of the magnet's rotation, the resistance of the spring is correspondingly overcome, and the finger attracted further round the dial plate.

Magnetically operated speedometers ordinarily suffer considerably in rectitude from variations in temperature. A.T. Speedometers are equipped with an effective temperature compensating device which is protected by a master patent in the United Kingdom and all the principal countries of the world, and by which A.T. speedometers are left entirely unaffected by change of temperature, climate or altitude. In this respect A.T. speedometers stand pre-eminent.

The entire satisfaction expressed by many leading firms and individuals in the motor business who have used A.T. speedometers on cars of various types give sufficient proof of the reliability of the instrument, and, after all, the engine revolution indicator is in principle exactly the same thing as a motor-car speedometer, so that, although the A.T. has not been tried to any great extent on aero engines, it is by no means an untried article.

The address of the A.T. Speedometer Co., Ltd., is 140, Long Acre, London, W.C., and from them any further particulars concerning the instruments may be obtained. Officers who experience trouble with existing revolution indicators would therefore do well to obtain as much information as possible on this subject, so that they can in due course back up their arguments with facts when they begin agitating for a new instrument.

### Poetic Justice.

It is with some satisfaction that one learns, on reasonably good authority, that one of the buildings which was damaged during the recent French air raid on Karlsruhe was the factory of the Waffen und Munition Fabrik, the which firm was extensively responsible for the supply of sundry consignments of rifle cartridges fitted with wooden bullets to the Turks during the recent Balkan War.

## THE REPORT OF THE ADVISORY COMMITTEE.

The Advisory Committee for Aeronautics issued its report for the year 1914-15 last week. Owing to the war it is natural that little definite information should be given, but the general lines on which research is being carried on are of interest to those concerned with aviation.

The Report states that during the absence of Major-General Sir David Henderson on active service, Colonel Brancker, Deputy Director of Military Aeronautics, has acted as the representative of the War Office.

Continued progress has been made during the year in the consideration of the stability of the aeroplane. A large amount of attention has also been given to improvements in details, both aerodynamically and constructionally.

Important additions have been made to the equipment of the National Physical Laboratory. The large air channel, 7 ft. square in section, has been completed, and is in use. In this an air speed of 65 ft. per sec. (roughly 44 m.p.h.) can be reached.

In connection with the researches on light alloys, a rolling mill has been provided at the National Physical Laboratory, to enable the practical working of light alloys to be studied.

Apparatus for tests of air-screws in the wind channels, new gear and attachments for tests of seaplane floats in the William Froude National Tank, and apparatus for strength tests of large samples of aeroplane and airship fabric have been installed.

The work done in the air channels has included tests on models of airships, and airship appendages, aeroplane wings, bodies, fins and rudders, tail planes and elevators, struts, wires and other aeroplane parts, and on models of complete aeroplanes. A large amount of this work has been carried out at the request of the Admiralty and the War Office, to supply information needed for improvements in the construction and design of machines. Systematic research has been continued to secure increased aerodynamic efficiency in all parts.

Investigation of the stability of the aeroplane has been extended to the case of a machine turning, whether moving in a horizontal plane, or in a spiral path. The analysis involves the solution of algebraic equations of the 8th degree, and the methods applicable to the solution of such equations have been developed with a view to the reduction of the labour involved. The machinery thus provided will, it is hoped, be of assistance to other workers on the subject. Interesting results have been obtained as to the influence of turning on the longitudinal stability, and on the tendency to the form of instability known as the "spiral dive." Some of the experiments on complete models in the air channels have been directed to obtaining data required in connection with these investigations relating to stability, and for the design of the controls.

Further tests on air-screws have been made on the whirling arm, both for the Admiralty and for the War Office. These tests have brought out points of importance, and experiments are proposed with a view to the improvement of the methods of calculation applicable to air-screws and to securing a means of predicting more accurately the performance of an air-screw under various conditions of use.

In continuation of the inquiry into the strength of aeroplanes, methods have been devised for the calculation of the stresses in the wings and bracing of aeroplanes, and have been applied to the determination of the stresses occurring in special types of machine. The methods of calculation applicable to more rigid structures require modification in relation to so flexible and elastic a structure as that of an aeroplane, and the method of "strain energy" has been developed and applied for this purpose. It is hoped that the results of this work will be of assistance to designers.

At the request of the Superintendent of the Royal Aircraft Factory, experiments have been made on the fatigue strength of stranded cables, passing over pulleys of relatively small diameter.

By desire of the War Office an investigation has been undertaken with regard to autogenous welding, and the precautions to be observed in its employment in aeroplane parts.

Fatigue tests of a wing spar which have been in progress over a considerable period have recently been completed.

A large number of cases of fracture of aeroplane parts, especially of parts of engines, have been investigated at the request of the Admiralty and of the War Office. It has led in many cases to suggestions for improvements in design which have been brought to the attention of manufacturers, and have in some instances revealed undesirable variations in the composition of the materials employed in manufacture.

Tests have been continued in the William Froude National Tank on models of floats for seaplanes, and improvements have been made in the methods of tests and the apparatus employed. Useful information has been obtained from experiments carried out by the Admiralty on machines fitted with floats designed in accordance with the results obtained in the model tests, and the report made to the Committee by the officer who carried out these experiments emphasises the value of the investigations made in the tank.

An increased volume of work has been dealt with relating to airship and aeroplane fabrics, methods of proofing, dopes, etc. Special attention has been given to the strength required in aeroplane fabrics, especially under the conditions of service and exposure. The stresses which may occur in the fabric on the wings of aeroplanes under various conditions have been more fully investigated, and a series of bursting tests on aeroplane fabrics has been carried out for comparison with the results obtained from tensile tests. The Committee desire to thank Mr. T. Jackson Greeves, of the Portadown Weaving Company, Limited, for assistance in these tests.

Investigation as to deciding upon standard conditions in tests of fabrics, especially undoped fabrics, has been completed, and it has been possible to specify conditions for the contractual testing of aeroplane fabrics which increase rapidly of test and uniformity in results. These conditions have been adopted as standard for War Office specifications.

Other matters under consideration by the Committee include sighting appliances for use on aeroplanes, and accuracy in bomb-dropping. Special investigations for the Admiralty and the War Office include the analysis and examination of deposits on airship envelopes, and tests of magnetos for wireless installations to determine their liability to ignite explosive mixtures of gases.

A report on Gyroscopic Theory has been prepared by Sir G. Greenhill, and was issued in December last.

#### **Full Scale Work at the Royal Aircraft Factory.**

The investigations at the Royal Aircraft Factory of design of new or modified types of aeroplanes, and improvement of existing types, have been closely related to military requirements. In particular the theoretical study of stability, and experiments on models associated therewith, has been tested and demonstrated on full scale aeroplanes.

Reports from the Expeditionary Force have indicated the advantage of attention to strength and good construction in all details of aeroplanes. In all machines now designed the margin of strength exceeds that specified as required from considerations of flattening out after a steep dive. The consequent increase in weight has to some extent been compensated by other improvements, and by increased aerodynamic efficiency.

In military use further increase in strength has to be considered in relation to other factors affecting safety; in particular the merit of rapid climbing tends to safety of a different kind, and limits the increase in strength and weight which might otherwise be adjudged desirable.

[That is to say, there must be a factor of safety against being shot owing to inability to climb to a safe height, as argued long ago in this paper.—Ed.]

In accordance with suggestions made by the Committee to the War Office, the use of autogenous welding has been dispensed with in parts under stress. Many other matters of detail in design and construction as affecting strength have also received attention.

Tests of new designs have shown that it is possible, without sacrifice of controllability, to make the aeroplane inherently stable and capable of flying satisfactorily without use of the controls. Improvements have been introduced in the

shape of the body and engine covering, in tank capacity, in the section and attachments of wires and in many other ways.

Experiments on alighting gear have been continued, and two standard types adopted as suited to special requirements. [Can this mean the simple V chassis to increase speed?—Ed.]

New types of machines have been designed embodying special features which recent military experience has shown to be desirable. In all of these it has been found possible to secure stability under ordinary conditions. [Possibly the big fighting machines mentioned by Mr. Tennant.—Ed.]

Wireless and other signalling apparatus has been designed, and bomb-dropping gear has been fitted and investigated.

Experiments with engines have been continued, and four types of engine for different purposes have been designed [By the R.A.F., which denied that it was competing with engine makers?—Ed.] and are being produced by various manufacturers for use in standard aeroplanes. Much work has also been carried out in conjunction with makers of other types of engine in this country, and the experience gained in the testing and repair of engines used on service machines has thus been rendered of material assistance in the improvement in detail of existing types.

Increased accommodation has been provided for the instrument department. The work of the factory in this respect involves a considerable amount of routine testing of instruments for use on aeroplanes, which can now be dealt with more rapidly. Improvements have been made in the standardisation of dimensions and methods of attachment of instruments, so that those of different makers can be readily attached to standard instrument boards or supporting panels. Attention has been given to the clear marking and to the lighting of instruments, and a dashboard lighting set has been produced. A thorough investigation has been made into the sources of compass error on the aeroplane, and a full report on the work has been presented to the Committee.

The dynamometer and recording instruments for tests of full-sized air-screws on the whirling arm have now been fitted, and tests have been made. Owing to shortage in the power it is not yet possible to obtain full speed conditions, but with some air-screws forward speeds of 50 to 55 miles per hour have been reached, corresponding with the climbing speeds of certain aeroplanes. It is hoped shortly to increase the speed.

#### **Naval Work.**

Close co-operation has been maintained between the experimental department at Teddington and the Air Department of the Admiralty. The Committee is indebted to the Air Department for assistance and information with regard to work on airships and aeroplanes, in relation to the experimental investigations on models.

The Committee has received from the Air Department requests for investigations of the air pressure on airship sheds, tests of wind screens, investigations relative to fabrics, and to the material and design of parts of aeroplanes and of engines.

In July, by invitation of the Air Department, the Committee visited Naval Air Stations, to inspect naval airships, aeroplanes and seaplanes, and to examine certain questions on machines in flight.

At the end of 1913 the experimental work in meteorology was moved from Pyrtton Hill to new quarters in the Royal Aircraft Factory at South Farnborough. The Meteorological Office at South Farnborough is administered as a branch of the Office at South Kensington, and its normal staff consists of a meteorologist provided by the Meteorological Committee, a professional assistant provided through the Advisory Committee, and a boy provided by the War Office. This involved the organisation of an observing station for obtaining continuous records of pressure, temperature, humidity, rainfall and sunshine, with regular observations for the purpose of control, of frequent observations of air currents at different levels by means of pilot balloons, and of arrangements for the supply of charts, forecasts and other information to the Aircraft Factory, and to the naval and military wings quartered at South Farnborough. The Commandant at Upavon has arranged for the reciprocal checking by the meteorologist at each station of the special forecasts issued by the other. Further progress with experiments in meteorology has, for a time, been postponed.



## Aero-motors: In Kind and Construction.—(Continued)

BY GEOFFREY de HOLDEN-STONE.

Granting the assumption of the foundations of a motor, piston and cylinder, it follows that the nearer to those foundations improvement begins the better the prospect is for the general efficiency of the motor, even if improvement goes no further. That is why you find steam-engineers—whose noses are rubbed against the subtleties of fluid-pressure daily—are prone to experiment more with new packings than with any promising miracles in valve-gear or superheating. So the method of putting the piston in its pot becomes of supreme importance. The ideal is an extremely light and easy-fitting—not to say sloppy—piston, which shall set up as little surface friction with the cylinder-walls as may be, and that shall be steadied in its course mainly by the length of its own trunk. Which length, in my opinion, should never be less than that of the stroke, and is better to be a full inch longer, even if you have to slot out the bottom to make room for the connecting-rod at full thrust-angle.

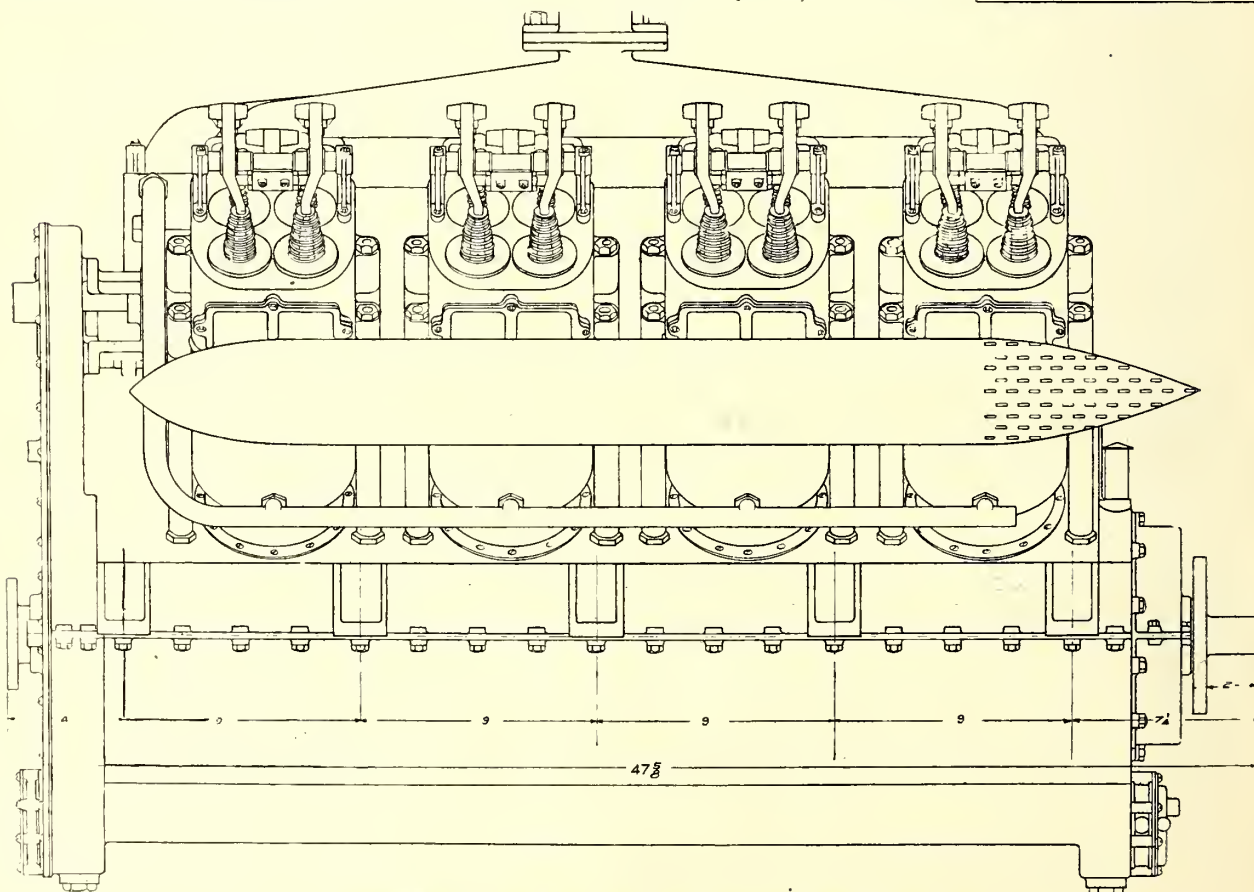
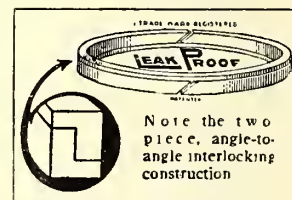
Panhard, De Dion, and to a less degree Renault, all appreciated these points from the first, so nobody was ever stalled by piston-seizure with any of their cars. At the same time, their names do not figure in the records of Gaiilon or the Grand Circuits. Why?

Because against the realisation of this ideal arises the consequent loss of pressure. Fifty pounds was all at the beginning, and now in our gas-pipe cylinders it is nearer the hundred. We may help things greatly with oil-rings and belts—indeed, I have always advocated doing more, by pitting out the pistons with externally-countersunk pockets over all the available trunk-space, until it resembles a section of possibility-stocking—but although all this helps splash-lubrication and every other kind to carry on the good work, its limit of pressure-resistance is soon reached.

We must therefore have a certain number of flexible scouring rings. As few as may be, of course, so that they be leak-proof—mutually, if not individually—which hitherto is just what they have declined to be. They *will* work round, unless they are spigoted. And if they are spigoted they are spoilt as piston-rings, and may readily break, because spigoting obviously sets their expansion and contraction movement to and from middle points, instead of from the open ends all round. So hitherto we have had to use three or four such rings, including one at the lower end of the trunk, and still the combined result is not leak-proof, because the pressure leaks over one ring at a time.

True, the Belgians latterly introduced a kind of Z-bodied double ring of which the ring members—the upper and lower strokes of the Z—abutted on the diagonal. But though this gadget was ostensibly leak-proof, it was so wide that one only could be fitted, so the total available result was no better than three ordinary rings.

But at long last the McQuay-Norris interlocking ring as illustrated—which is fitted to the Curtiss motors—has appeared, to realise, apparently, all the ideal of easy piston body fit combined with total freedom from leakage. For, set together, angle within angle, as they are, the vertical and horizontal of each ring member naturally completely shut off the opening in the other one: yet both remain free to expand and contract relatively to each other, to the piston, and to the cylinder wall. So each pair must be leak-proof *per se*. Con-



Curtiss Model V, 160 h.p. Side view, showing Double Valves, etc.

sequently, one need not fit more than two of them around the upper part of the piston to resist the gas-pressure at any period of the cycle; so not only is each charge of mixture fully compressed, but the whole force of the power impulse becomes available. At the bottom of the piston one need not fit any ring at all: in fact, it is better not to place any such obstacle in the way of the oil reaching the surfaces of piston and cylinder as freely as possible. Above the rings none of the oil can get, so none can be burnt on the piston head or the valves—which is the chief cause of pitting—so all carbonisation trouble, with its manifold secondary and tertiary ills that lead good motors into hospital, should be got rid of. Withal, the rings are free to work round the piston from flazes to breakfast-time without impairing their efficiency.

#### Minaretting Cylinders.

Nowhere, again, except on the drawing-board of projected, but alas, uncapitalised designs, have I seen such a fine example of minaretting cylinder heads to increase available valve area without unduly enlarging combustion space, as in the Curtiss Model VX. No original feature, as I say, but in this case, fortunately carried out into being, as no one else ever did, except Bertram Joy, in a single example that failed to survive the draughts of Olympia.

Nevertheless, the obvious fact that even the smallest segment of a circle or sphere represents a greater area than any chord or plane surface, makes it equally clear that the advantage of minaretting is not made the most of, unless the cylinder head is domed at the same time, instead of being left flat. Perhaps the chief point to remember in this connection is that the bigger the valve diameter, the less need the lift be; which not only lessens the tendency to pitting, but gives a quicker release and inlet, beside saving the power expended in cam-shaft rotation. Another is that a fairly liberal doming—since it still confines the whole of the combustion effort to the piston-head—more than compensates for any slight reduction in pressure, by greater flexibility and smoother running.

Still, a third point is that with the valves operated—as is the obvious method in any V-type—from rockers which are pivoted more or less about the head-centre, the radii which those rockers constitute from their pivot head become more rectangular to the valve-stems, and press more directly upon them. The rockers themselves, too, are stronger, when curved to match the cylinder-head profile, and so may be lighter. In fact, when thus curved, there is nothing to prevent their being formed as stampings, channelled out everywhere but at their ends and pivoting points. Thus, to be critical—chiefly with the motive of seeing so good a design as the Curtiss made the most of—there seems to be nothing to hinder the doming of the cylinder heads of this VX type—which is said to give more

than 170 h.p.—or both doming and minaretting the 160-h.p. Model V. Neither of these models carry yokes, but are nevertheless attached—through lugs on the cylinder heads in the more conventional way—by tubular colonnette bolts to the crank-chamber, according to the invariable Curtiss practice in all models, for the reasons already given.

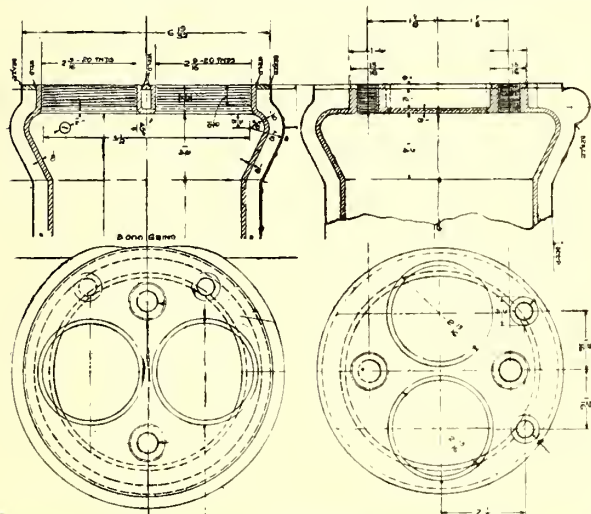
Otherwise, apart from the direct relation of the crankshaft to the propeller—on which point there are two opinions—the most immediately noticeable feature of the Curtiss motors is the valve-gear. It is no less interesting, too, as one of the various single-tappet or concentric systems of operating overhead valves, the merits of which—that valve-position being clearly the best for four-stroke aeromotors—may be usefully discussed, especially since there is not twopence-worth of patent-matter by this time in any of them.

#### Points of Valve-Gear Practice.

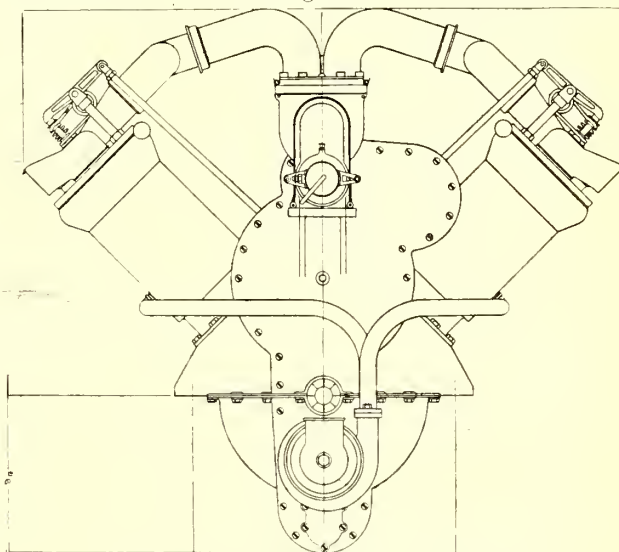
Thus the lower part of the Curtiss device, the double inlet cam enclosing the exhaust cam, which lift a tubular jumper—slightly flatted on either side to prevent it rotating, and containing a solid one—and these again lifting a tubular outer tappet enclosing a solid rod—is substantially the same that was used nearly fourteen years ago to operate the concentric valve of the Napier heavy-oil marine motor; to which, however, no intermediate rockers were attached, the valve-lift being direct. A similar device, but with a different rocker connection, is employed for the concentric valve in the Panhard and the Dansette-Gillet motors. In both these last, however, only the valves carry springs.

On the other hand, the earliest instance of the spring-bearing tappet was seen on Lancia's first F.I.A.T. racing car. In this case the diagonally-set valves were held up to their seatings by a double leaf-spring and operated by a rocking beam, pivoted above the spring, that was jointed to a single stout tappet-rod. This rod—which had an adjustable button or shoulder taking one end of a coil-spring, the upper end of which seated under a forked lug from the cylinder casting—was lifted or allowed to drop—in alternate compression and tension—by a single cam cut with a recess and a neutral portion following the exhaust ramp: and thus rocked the beam above.

Practically the same system is understood to be employed in the Austro-Daimler aeromotor to-day, except that, instead of using a coiled spring to pull down the tappet-rod, it is jointed to the middle of an anchored lever with two free roller-bearing arms; one of which extends over the exhaust cam so that the rod is lifted, while the other projects under an adjacent inlet cam to pull it down immediately afterwards. The simple effectiveness of this arrangement, I remember, appealed to that genial experimentalist in motor curiosities, Costantini, somewhere about ten years ago, in the great days when one used to discover the genius of Latin motorcraft skied

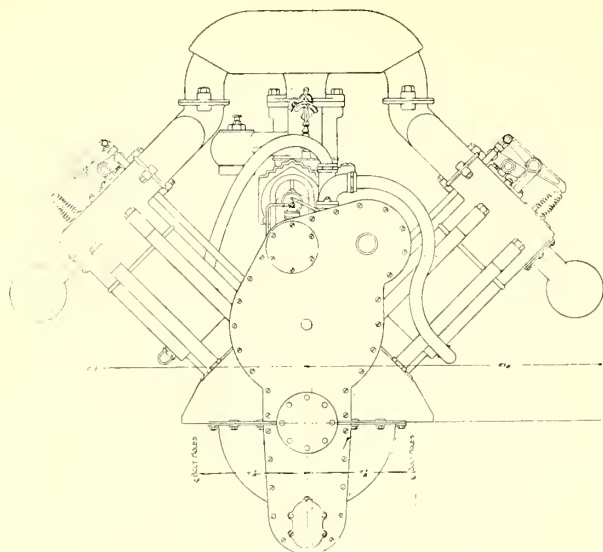


Sections of Cylinder Heads of the New VX Model 170-180-h.p. Curtiss Aeromotor: showing Combustion Chamber, Minaretting and Increased Valve Area.



Curtiss 170-180 h.p. Model VX. Rear View.





Curtiss Model V, 160 h.p. Rear View.

in the galleries of the Grand Palais or buried in the Serres de la Ville among the motor-boats and electrogenes. "Prior user" is not the least of the weapons we can employ against the Teutonic copyist!

Quite successfully, too, the Wolseley Company employed an unsprung, jointed tappet-rod with a stirrup or ring surrounding the cam, in their 120-h.p. V-type of 1913.

#### And the Curtiss Way.

However, the Curtiss system is at least an original combination of some of the foregoing materials. For the outer tube—which is of high-tensile steel, only three thirty-seconds of an inch thick—is spun out into a shoulder at the lower end to take a pull-down spring. I suggest that threading it to take an adjustable button, F.I.A.T. fashion, would be better, to correct the spring variation; but the seating thereof is just as well taken as in the Lancia design, by a band-steel stirrup—through the top of which the tube is thrust—anchored to the crank-chamber.

The upper end of the tube, however, is threaded, not only for accurate adjustment, but also for attachment to the hollow shank of a T-piece, the arms of which are jointed to the free ends of an H-shaped rocker. The other ends of this rocker are anchored to the sides of a central fulcrum-pillar on the top of the motor, while the cross-piece of the H bears on the tail end of the inlet valve. This enables the solid internal rod, projecting upwards from the tube and through the hollow of the T-piece, to be jointed to one end of a long rocking lever pivoted centrally on the top of the fulcrum-pillar, and bearing with its free end on the tail of the exhaust valve. And, fitting so closely as it does inside the tube, this rod obviously reinforces the tube against any strains other than the tension which it is constantly under, and is quite strong enough to bear by itself. In fact, the only criticism I have to offer of the entire system is that leaf-springs would hold up the valves just as well, and be less subject to the effect of heat; and that the inner jumper—which fits like a pump-plunger—fits just a shade too well for its work.

This form of valve-gear, it may be said here, is the one employed not only for the original vertical four-cylindred 60-h.p. Model S Curtiss, but for the 70-h.p. V-type Model O, the 90-h.p. Model OX, and the 100-h.p. Model OXX. In the 160-h.p. Model V, however, in which four valves are mounted in each cylinder, it is simply duplicated; while in the 175-h.p. minaretted Model VX the two huge valves are operated in the conventional way, with a rocker and solid tappet-rod each.

#### Other Details.

As to the induction system, although the trunk leads from the carburettor are handsomely enough fitted with long sleeve-like water-jackets connected with the return water lead, frankly, for motors that are claimed to have undergone such a searching process of development—and in other details cer-

tainly show it—I see nothing but the most conventional motor-car practice: even obsolete, according to general aeromotor experience. What else are manifolds that lead the mixture round no fewer than four bends—the last one, to the middle cylinders, a reversing flow? Two omnibus-tubes for each cylinder battery, united by a loop connection forward, would surely have reduced these bends to a single turn-in to each cylinder: the mixture stream would have circulated truly, and the efficiency result, *on racing experience* would certainly not have been less. The construction cost in time and material would, on the other hand, be reduced anywhere up to 50 per cent!

The latest European practice, too, would have prescribed water connections of rather more generous diameter: if, indeed, it did not permit—especially in a V-type motor—taking the inlet directly beneath the exhaust valves, after the fashion so successfully adopted by Clement and other leading Frenchmen. For, thin-walled though the beautifully-made Curtiss cylinders are, the flanges that have been so thoughtfully set at intervals on their outer surfaces would have prevented any distortion, even had the surrounding water been hotter by many degrees: the condition, by the way, in which the most is made of the combustion-effort. However, the answer is that the hardest tests have not found these connections anything but satisfactory.

On the other hand, in all the more important internal mechanical details the best European practice would be hard-set to improve upon the specification. What could be better contrived for their work than valves—in all cases large—with cast-iron heads  $2\frac{1}{2}$  inches wide, electro-welded to  $\frac{3}{8}$ -inch steel stems? Or drop-forged connecting-rods of chrome-nickel steel, with hollow-bored shanks? Or, again—except that the grain runs better and with less irregular core in a forging—than a crankshaft turned from a solid billet of chrome-nickel, with all parts bored out, not only for lightness, but to provide oil-chambers and channels to the connecting-rods and bearings? What spacing, too—where space is doled out in sixty-fourths—could be more judicious than allotting  $3\frac{1}{4}$  inches for the end bearings, with 1 13-16 inch for the three intermediates? And whatever may be our own ideas as to the fitting of those bearings, that grinding of the crankshaft to half a ten-thousandth shows American accuracy of fit—when it is considered worth while—to be equal to our very best attainments. We can trust American skill to make our time-fuses and to ream the almost invisible air-holes therein that lead to the detonating charge.

(To be continued.)

### The Invasions of England.

Mr. Kellaway (L., Bedford) asked the Prime Minister in the House of Commons on June 24th if he would state how many open towns and unfortified places in the United Kingdom had been attacked by Germany, and how many civilians had been killed and wounded respectively as a result.

Mr. Brace (Under-Secretary, Home Department), who answered, said: The reply made to a question on February 22nd last gave the number of civilians killed and injured in the bombardment of the Hartlepoons, Scarborough, and Whitby by hostile warships. The figures were 127 killed and 567 injured. There have been altogether fourteen attacks by hostile aircraft, extending over wide areas, and chiefly directed against unfortified towns, villages, and country districts. The total casualties in these raids are: Killed, 56, of whom 24 were men, all of them civilians, 21 women, and 11 children; wounded, 138, of whom 86 were men, 35 women, and 17 children.

### "Toujours les Zeppelins."

Quite recently a youth of the quasi "nutty" type, who might quite conceivably have been eligible for Service, was observed to emerge from a certain restaurant near Piccadilly which possesses an underground grill room. Immediately he reached the top of the stairs he noticed a crowd of people across the road, gazing with open mouths at a point in the sky immediately behind the restaurant. With the greatest presence of mind he immediately turned round in his tracks and bolted down the stairs into the grill like a scared rabbit! Actually the crowd were gazing at an Army balloon about 7,000 feet up.

### Aeroplanes in the House.

In the House of Commons on June 24th, Mr. Hohler (U., Chatham) asked the Prime Minister whether he would take steps to confer on the mother of the late Lieut. Warneford, R.N., V.C., a substantial annuity as a mark of the nation's appreciation of his distinguished career and gallant conduct.

Mr. Macnamara (Secretary to the Admiralty), who replied, said the regulations provided for the award of pensions to the mothers of naval officers who were killed on duty, but the grant of any such pension was subject to the condition that pensions might be awarded only to mothers who were widows in distressed circumstances. In view of the wording and intention of the regulations he did not think that any award could be made in this case. He took this opportunity, on behalf of the Board of Admiralty, of expressing their sense of the great loss which the Service had sustained through the death of this heroic young officer and of their deep sympathy with his relatives. (Cheers.)

It is altogether lamentable that people who are thus unable to see things in their proper proportions should be allowed a say in the councils of the nation. Why should a lady who has a husband and holds a good position in society be deserving of a pension when many gentlewomen are in a state of penury owing to the deaths of their husbands on active service, or even to their having volunteered for service and having given up good positions to do so? The newspaper fuss over the young officer lately deceased seems to have upset completely the correct point of view on everything connected with his life and death.

\* \* \*

In the House of Commons on June 28th, Mr. Lynch, who had three questions on the paper addressed to the Minister of Munitions and dealing with the production of aeroplanes, complained he had been referred to the Under-Secretary for War for the answers. He wished to put live questions to a live man. (Laughter, and cries of "Withdraw!")

Mr. TENNANT, on rising to reply was greeted with laughter, and Mr. LYNCH said he would postpone them till to-morrow.

Sir J. SIMON (Essex, Walthamstow, L.), in reply to Mr. NEVILLE (Wigan, U.), said no doubt the public would pay heed to the warnings of the Commissioner of Police as to keeping sand or water in readiness in case of air raid fires, and not purchasing portable fire extinguishers without a proper guarantee. Advertisements were being carefully watched, and further action would be taken if this appeared necessary.

\* \* \*

Non-commissioned officers and men are now in some instances trained as pilots, and more will be trained as occasion arises.

Mr. Tennant, who made this statement in Parliament on June 28th, in reply to Mr. Joynton-Hicks, added that experience had proved the thirty-year age limit for commissions in the Royal Flying Corps to be wise, and only in exceptional instances is it departed from. There is, Mr. Tennant said, an abundant supply of applicants of suitable age.

### The Week-End at Hendon.

Saturday was bright and breezy. There was a good attendance at Hendon, the crowd including a whole hospitalful of wounded soldiers from Brockley Hill, who lent an unusual note of colour to the aerodrome in their blue suits. The air was anything but pleasant for flying, but a large number of exhibition flights were made during the afternoon.

The pilots out included, of course, Messrs. Manton, Winter and Osipenko on G.W. biplanes, working hard in a gusty wind blowing up to 30 miles per hour. One or two excellent flights on a Beatty-Caudron were made by Mr. Kenworthy. By the way, he was also out on the same machine last week-end, but was then erroneously announced as "Mr. Johnston."

Mr. Moore took up several passengers on his L. and P. Caudron, including a clergyman who has developed much enthusiasm for flying and has recently had a number of flights.

On Sunday heavy showers spoiled a good day's flying.

Mr. Beatty has erected a hefty bench at the back of the stand in the shilling enclosure, and was busily engaged on Saturday in testing the Roberts two-stroke engine, to which brief reference was made in a recent issue of THE AEROPLANE. It was fitted with a Paragon three-bladed propeller, and though

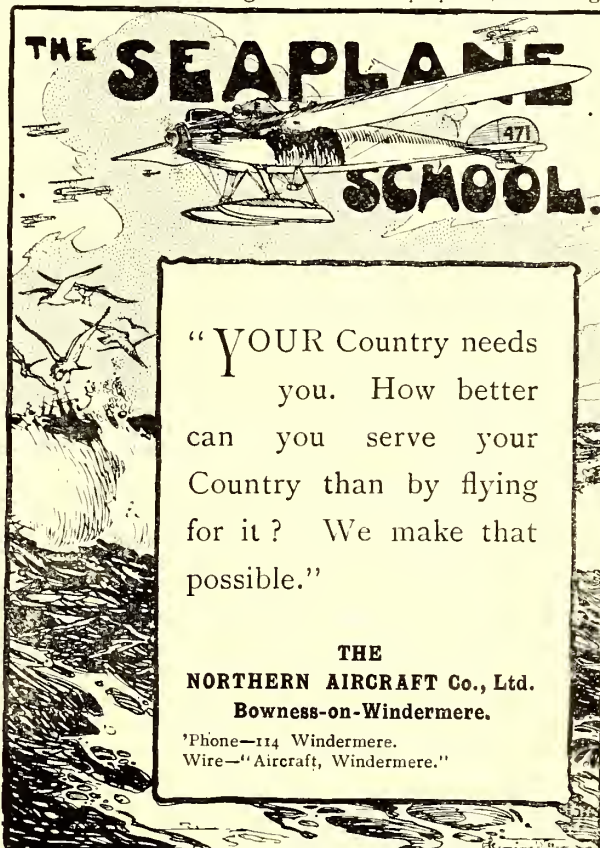


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no figures are available at the moment we gathered that the first experiments were very satisfactory.

The London and Provincial Aviation Company have in hand orders for three more machines to be supplied to private individuals who, like Mr. Moore, have not yet succeeded in entering the R.N.A.S. or the R.F.C. Mr. Moore, we understand, was rejected on account of deficient eyesight, but his flying at Hendon leaves little, if anything, to be desired. It is a very encouraging sign to learn of orders from private owners coming in, and the Services are bound to benefit. The hard work and enterprise shown by Mr. Warren during the past few years deserve recognition.

### School and Weather Reports.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
East Coast ...	Fine	Fine	Fine & Show'y	Fine	Fine	Fine	Wet, a.m. Fine p.m.
Hendon ...	Fair	Very Windy	Very Windy	Very Windy	Fair	Fair	Fair

**Hendon.**—AT THE BEATTY SCHOOL OF FLYING.—Instructors for the week: Messrs. G. W. Beatty, W. Roche-Kelly, C. B. Prodger and P. A. Johnston.

Pupils with instructor on machine: Messrs. Banks (25 mins.), Bond (25), Chalmers (22), Crossman (25), Delves (40), Eaton (17), Fawcett (10), Fox (17), Jones (11), Robb (15), Ross (41), Tomlinson (25), Vickers (5), Theo (17), Sampson (8), Alcock (18), Collett (6), Litton (8), Boyle (10).

Machines in use: Beatty-Wright dual control and single-seater and Caudron biplanes.

Mr. Kenworthy, who has now for some time been taking extra practice at the school, flying alone on the 45 h.p. Caudron, put in 105 minutes during the week on this machine. Mr. Blandy continued practice on the 45-h.p. Caudron.

Exhibition flights were given on Thursday, Saturday and Sunday by Messrs. Roche-Kelly, Prodger, Johnston, Kenworthy and Blandy, and four passenger flights were taken.

AT THE GRAHAME-WHITE SCHOOL.—Instructors for the week: Messrs. Manton, Russell and Winter. Pupils with instr.: Prob. Flt. Sub-Lieuts. Clayton, Douglas, Hardman, Murray, Pearson, Penley, Perham, Roach-Pierson, Sievking and Watkins. Strts. alone: Prob. Flt. Sub-Lieuts. Hardman, Hood, Pearson, Pennington and Watkins. Half cires. alone: Prob. Flt. Sub-Lieuts. Hardman, Hood; with instr., Pearson and Watkins. Machines: Grahame-White biplanes.

AT THE RUFFY-BAUMANN SCHOOL.—Instructors for the week: Messrs. Baumann, Ruffy, Virgilio and Winchester. Pupils with instr.: Messrs. Perrins (10), Fenning (10), Wilson (10), May (6), Gardner (20), Wallis (19), Mathewson (6) and Balfour (38). Strts. alone: Wilson (10), May (6), Wallis (19) and Balfour (10). 8's and cires.: Mr. Bell (21). Mr. Bertram Charles Bell of R.N.A.S., Chingford, passed excellent brevet, one of the best for some time. Machines: 60-h.p. Ruffy-Baumann, 50-h.p. Caudron type and 50-h.p. Ruffy-Baumann tractor biplanes. Unpropitious weather has stopped much school work this week. A new 50-h.p. Caudron type is now ready, so more vacancies are now open and inquiries are welcomed.

AT LONDON AND PROVINCIAL AVIATION Co.'s SCHOOL.—Instructors: Messrs. W. D. Smiles, M. G. Smiles, W. T. Warren, and James. Pupils: Messrs. Dower, Minter, Everidge, and Pullinger, straights; Messrs. Jacques and Wattine, straights; Messrs. Adams, Scott, Gunner, McOnie, Sykes, Wood, rolling; Messrs. Irwing and Nethersole, circuits; Messrs. Dower and Minter, half-circuits. Lieut. Nethersole took excellent ticket; his first landing being actually on the mark. Machines in use: Three L. and P. tractor biplanes.

AT THE HALL AVIATION SCHOOL the following pupils were receiving practice: With Instructor Stevens: Messrs. Snook, Furlong and Mitchell.

With instructors C. M. Hill and H. H. James, the following pupils were taking rolling practice: Messrs. Hamer, Booker, Cook, Yonge, Lieut. Jowett, Snowdon, Hatchman, Millbourne, Bell, Cownie, Bayley.

The following pupils were doing straight flights with instructor H. H. James: Lieut. Phillpott, Lieut. Raymond-Barker, Mr. Gordon and Mr. Gay.

Machines in use: Hall tractor (Government type) biplanes.

## MISCELLANEOUS ADVERTISEMENTS

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PATENTS; trade marks; inventors advised free.—King's Patent Agency, Ltd., 165, Queen Victoria Street, London. 28 years' references.

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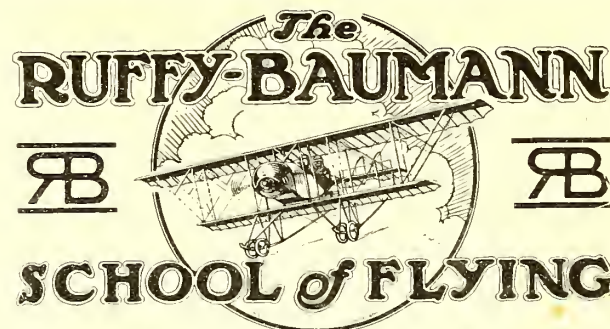
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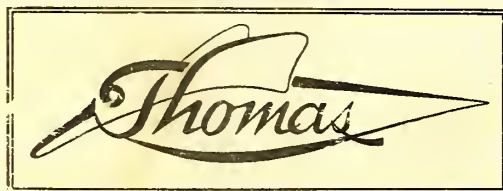
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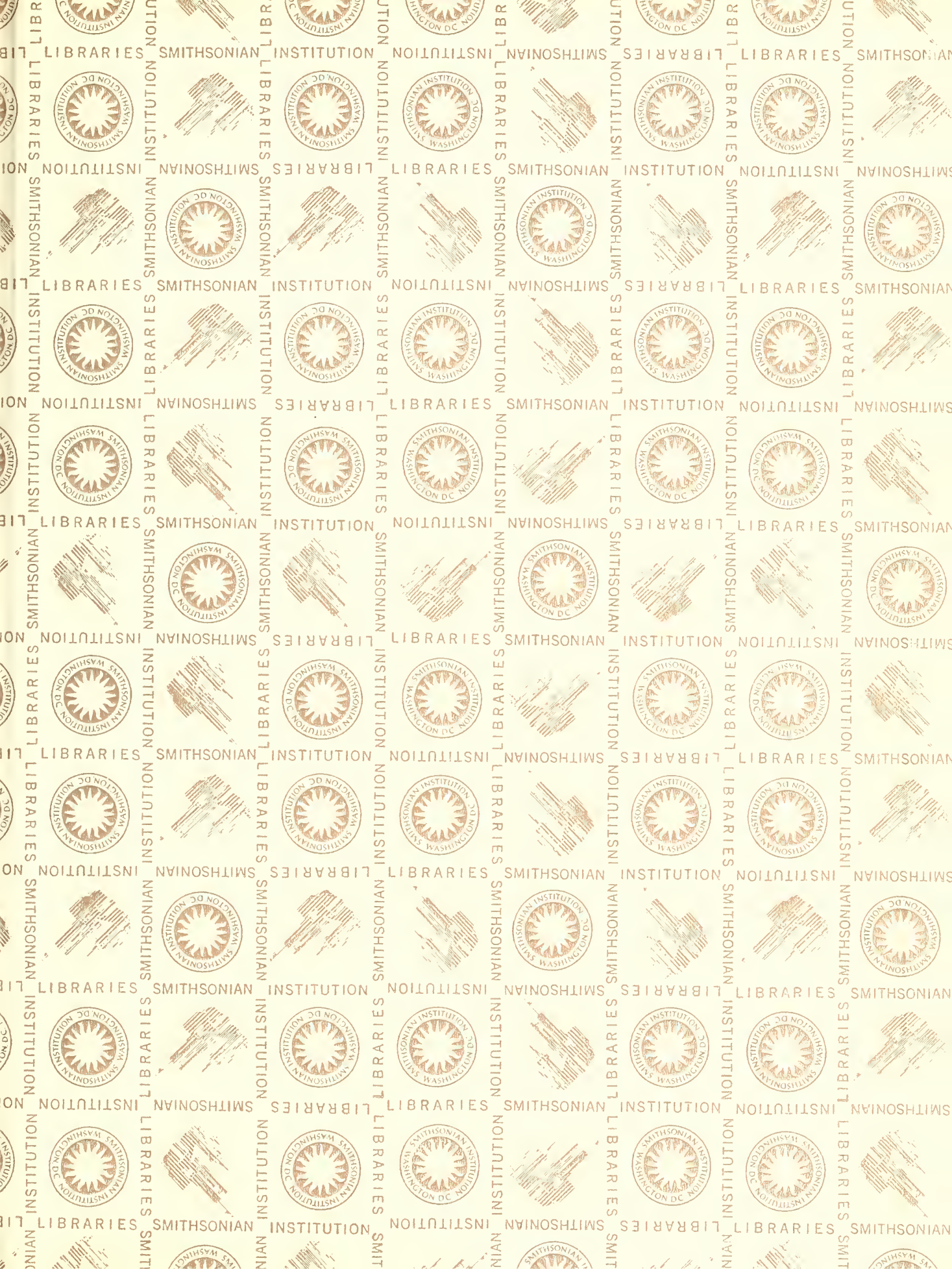














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